

AMERICAN ARTISAN

JULY 1957

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..The Magazine of

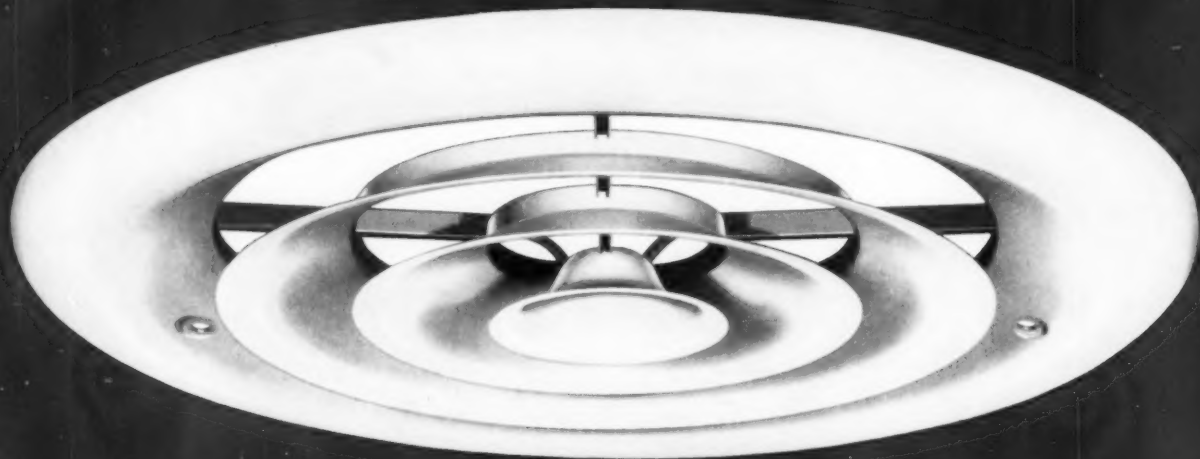
RESIDENTIAL AIR CONDITIONING

WARM AIR HEATING • SHEET METAL CONTRACTING

HEATING COMFORT STANDARDS — dealers' answer to price competition . . . pages 34-52



NEW BIG CAPACITY



TWO NEW CEILING DIFFUSER LINES

Think of a window half-way open. That's an ordinary diffuser. Now open it all the way. That's the big CAPACITY difference you get with these BIG new ceiling diffusers by Air Control. Startling engineering advances provide 50% more free area for unprecedented performance on ducts of same listed size — eliminate all need for buying oversize diffusers.

ROUND MODELS, with 50% greater free area than ordinary diffusers, feature advanced-design Air Flow rings with broad, anti-smudge outer ring and self-sealing gaskets. Available in both flush and step-down types.

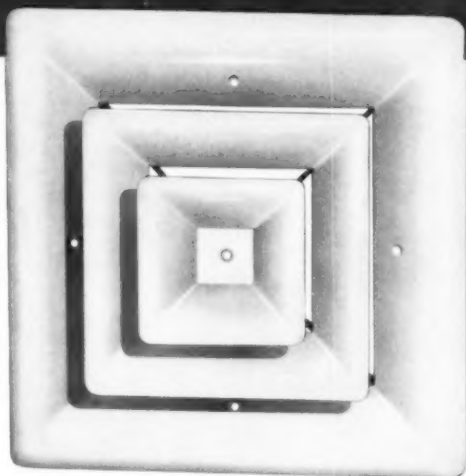
No. 90 SQUARE DIFFUSERS, with 40% greater free area, offer the same styling and engineering advances and are particularly popular for ceilings of acoustical material. Available in step-down style.

New "STA-SET" dampers are revolutionary new concept in damper design with push-pull rod for positive opening and closing of butterfly valves — eliminate troublesome chains. Special nylon brake holds valves in any position — cannot rust and lock damper. Adjusto-Stop permits balancing system at diffuser face.

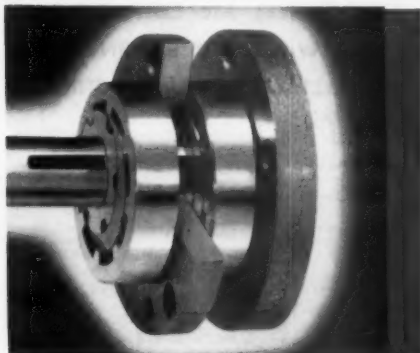
See your jobber—now—or write for full details.

AIR CONTROL PRODUCTS, INC.

157 Center St. Coopersville, Michigan

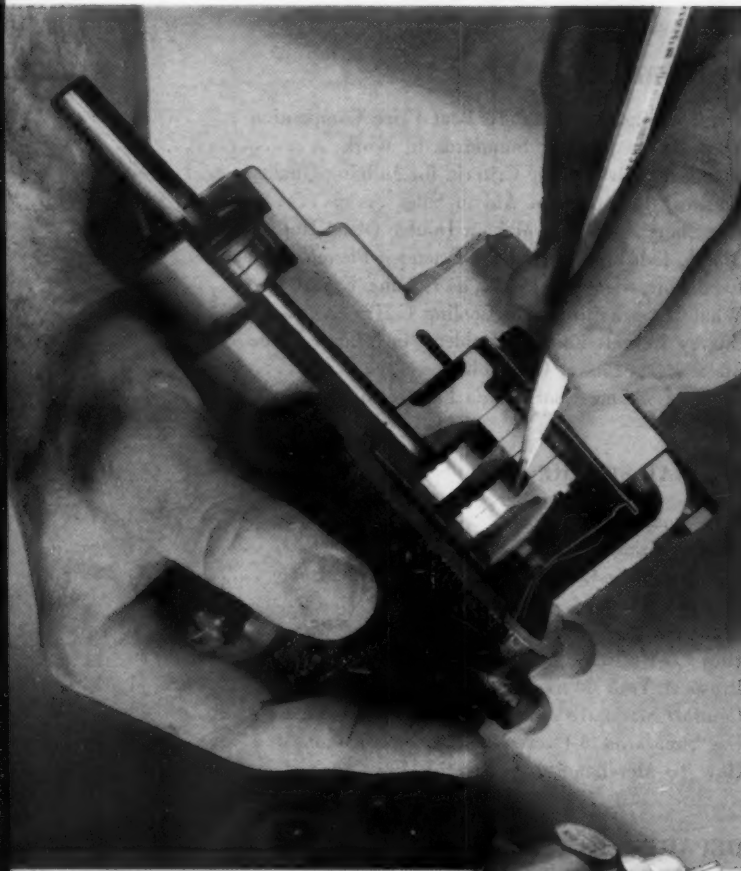


Available for both round and square diffusers.

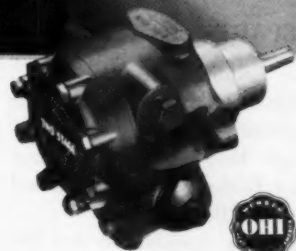


Efficient two-stage pumping assembly of Sundstrand's Model H

Design is the secret of the *double* lifting power you get with Sundstrand's Model H two-stage fuel unit. The first stage purges all air and foam, returning it to the tank—second stage pumps only solid oil to the burner nozzle. Because the shaft terminates within the first stage pumping members and the end plate positively seals these members, high vacuum and automatic air purging is always obtainable under either starting or running conditions. This simpler, more efficient arrangement, together with Sundstrand's more effective, easily serviced mesh strainer, is typical of how the Sundstrand engineers consistently put performance first in design decisions. Each detail of the Sundstrand line of fuel units has its essential place in the master pattern of helping bring out, in every installation, all the advantages built into your burners. The ability of the Model H to provide fast, dependable lifts, even on dry start-up, is one of the many good reasons why Sundstrand is "first in fuel units" from coast to coast.



MODEL H—high-pressure, two-stage, for long line, high lift 3, 6, 10, 14, and 20 gph. Three basic Sundstrand models solve all fuel unit problems.



SUNDSTRAND HYDRAULIC DIVISION

of Sundstrand Machine Tool Co., 2210 Harrison Ave., Rockford, Ill.—Eastern Sales Office: 89 Summit Ave., Summit, N. J. • Made in Canada by John Inglis, Ltd., 14 Strachan Ave., Toronto—Made in Sweden by Sundstrand Hydraulic AB Stockholm.

AMERICAN ARTISAN

JULY 1957

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Founded 1864; Vol. 94 No. 7

RESIDENTIAL AIR CONDITIONING

WARM AIR HEATING

SHEET METAL CONTRACTING

Merged with American Artisan are "Warm Air Heating" and "Furnaces and Sheet Metals"

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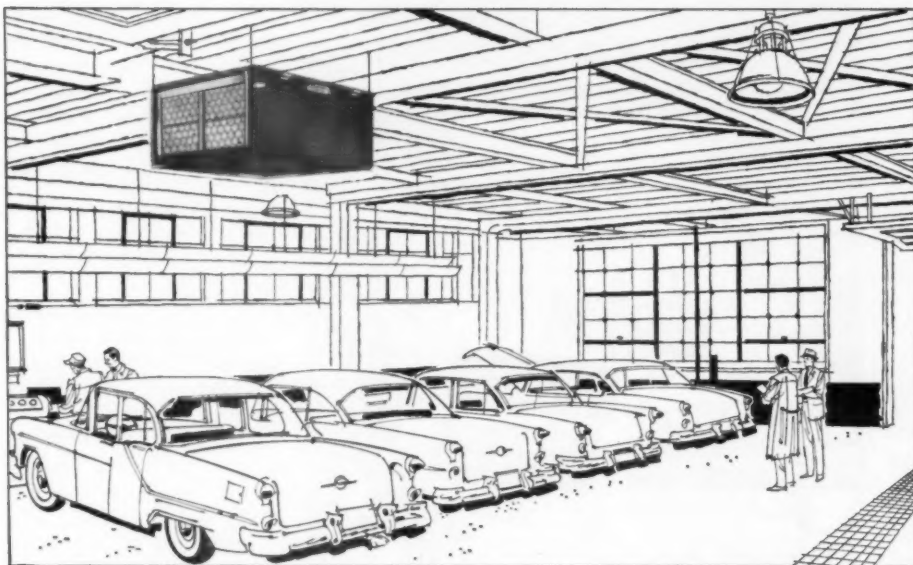
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New Mueller Climatrol 917 functions as both remote heating and cooling unit



Outstanding for stores, garages, restaurants, theaters, plant areas

Top air circulation capacity, large-area built-in filter—and priced right! It's Mueller Climatrol's new 917—in a class by itself for suspended installations. Designed for operation with remote air- or water-cooled condensing units, its big centrifugal blower distributes air effectively over large areas.

This unit can also be adapted to a year-round forced air system by adding an optional steam, hot water or electric heating coil . . . or will serve as a unit air conditioner with addition of an optional return air grille and discharge plenum. Choose from nominal 24, 36, 60 and 90-thousand Btu output cooling sizes.

New dealer "Signarama" scores immediate hit



And no wonder! With a fascinating flasher sequence that identifies the dealer in big letters, this spectacular outdoor display attracts attention from blocks away. Yet it's only about one-third the cost of a neon sign.



Mueller cooling production expanded to satisfy demand

To advance in step with today's trends in the heating-cooling industry, Mueller Climatrol recently increased cooling unit assembly capacity by 50%. The above is only one of three extensive production lines coordinated in one area to provide the flexibility demanded by Mueller Climatrol's growing volume and variety of air conditioning units. And with it comes even better quality control, even greater assurance of on-time deliveries for Mueller dealers.

Mueller Climatrol®

2030 W. Oklahoma Ave., Milwaukee 15, Wisconsin

... CLIMATE CONTROL FOR HEALTHFUL LIVING

MUELLER CLIMATROL SALES CLIP...



the editor's notebook

Thumbing Through This Month's Artisan

... we find a special section devoted exclusively to a presentation of the *Heating Standards—Great New Selling Tool*. This Artisan extra is a six point discussion of how dealers can take advantage of the inherent sales appeal of the "Kitchen English" heating standards which have been condensed from a detailed 19-article series in *American Artisan* by S. Konzo, University of Illinois. Recognizing the promotion value of these standards in combatting price competition with a non-technical "quality, not price" sales presentation, several dealers have already used them successfully in their promotion programs. NWAHACA is currently considering adoption of these standards as an industry-wide merchandising campaign. This month, Artisan starts the ball rolling with an insert containing a condensed version of the heating comfort standards, which can be cut out and used in sales presentations. The large special section tells what these standards are, how they can be used in prospecting for leads, in the sales presentation, and in closing the sale, and how they can be merchandised to the public.

Cooling

... and we visit the fourth split-level home with NWAHACA's mobile laboratory, where a *Field Test Traces Cooling Problem in 5-Level Residence* with a three zone year 'round air conditioning system. We find structural limitations typical of multi-level homes and the associated air distribution problems, which are mag-

INCREASE EQUIPMENT SALES ...cut down delivery costs

Sentry ODF® Tank Gauge tells drivers what they want to know
at point of delivery!



ONLY Sentry OFFERS SUCH A COMPLETE LINE OF DIRECT AND REMOTE READING TANK GAUGES

Above is SENTRY'S newest — The ODF At-A-Glance tank gauge that's setting new records in building sales and customer goodwill. Located outside of building at fill pipe, this easy-to-read weather-proof gauge shows the exact oil level in the indoor tank. Saves costly time consuming trips to basement, unnecessary hose unreeling and eliminates over-flow. Permits delivery without disturbing customer.

Other constant-register SENTRY gauges include combination tank and remote reading, barrel gauges, direct reading, and gauges for stove and space heater tank. Write today for full information about these fast moving business getters. Advertising aids available.



KRUEGER Sentry GAUGES
GREEN BAY • WISCONSIN

the editor's notebook

(continued)

nified by the complexity of the duct system which must serve an unusual number of levels in this home. We note some enlightening conclusions to many common problems which we file mentally for application on similar jobs in the future.

Hopper

... we make a useful sheet metal fitting, following the step-by-step procedures outlined in Hugh Reid's monthly pattern problem describing *How to Make an Oval to Round Double Offset Hopper*. We are shown diagrams of the fitting, applied above double sand loading conveyors in a production foundry, where the flow of sand must be regulated by sliding gate dampers and by the angle of inclination of the hopper. As usual, the simplified method is used to develop the pattern, with the help of scaled drawings of each part.

Certificate

... and we accompany Artisan's editors to S & W Heating Co., Chicago, where dealer Robert Strong was presented the first "Seller—Owner—User Certificate" which is currently being offered free to dealers who have central air conditioning in their homes or places of business, as a merchandising aid which tells customers that these dealers really know—first hand—the benefits and comforts of year 'round air conditioning. We also find in the article, *Award to Dealer Tells His Prospects That He Knows Air Conditioning*, some suggestions for using this "Seller—Owner—User" idea in advertising and publicity programs.

**KEEP YOUR BID LOW ENOUGH
TO LAND THE JOB....
KEEP YOUR COSTS LOW ENOUGH
TO MAKE AN EXTRA PROFIT!**



Here are two proven money-makers—machines which not only keep your bids low enough to land the business, but also cut fabrication costs to insure you a better than average profit.

Write for the Lockformer catalog—see how you can *sell* more, *produce* more and *make* more money doing it!

CLEATFORMER

Turns out any type of cleat needed in the shop. Double hem "S" Cleat provides greater strength and rigidity—permits the use of lighter gauges, longer cleats. The Cleatformer makes both drive and "S" Cleats with no changeover. Handles 22 to 28 gauge. All steel forming head, hardened and ground shafts. Case hardened steel forming rolls, machine cut gears and roller bearings throughout.

Auxiliary 3-in-1 combination rolls are interchangeable with drive cleat rolls. These allow Right Angle Flanges, Standing Seams and T connections to be formed simply by inserting stock in the proper position to a special 3-way guide furnished with the rolls.

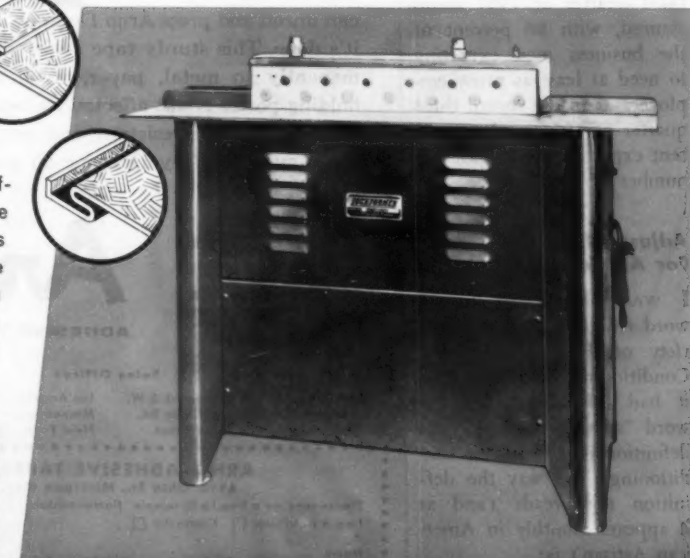
SNAP LOCK MACHINE

Fabricates both the receiver lock and the off-set lock for both round or square duct. The Snap Lock is made on flat material—makes no restriction on diameter of the pipe or the size of the duct. As easy to operate and as fool-proof as your Lockformer. Handles 24 to 30 gauge. Work is easily nested and stored for assembly on the job.

**WRITE FOR YOUR FREE
COPY OF THE
LOCKFORMER CATALOG
A-57**



One man with a Lockformer makes more Pittsburgh Locks
than 16 men with 8 brakes



THE LOCKFORMER co.

4615 WEST ROOSEVELT ROAD
CHICAGO 50, ILLINOIS

the editor's notebook

(continued)

Business Anticipates Good Third Quarter

BUSINESS MEN, executives of the medium sized and larger retailing, wholesaling, and manufacturing companies scattered across the country, have been interviewed and indicate that they expect their third quarter sales to surpass those of a year ago. They are somewhat more optimistic, profitwise, than they were a year ago. It is the concensus among more than half (54 percent) of the executives that their third quarter profits will be as high as a year ago, while 36 percent look for an increase, and only 10 percent are apprehensive of a decline.

Although the majority of the executives foresee no change in their third quarter selling prices as compared with a year ago, those expecting an increase are more than 10 times as numerous as those expecting a reduction.

The maintenance of high employment levels in the third quarter of 1957 seems assured, with 86 percent of the business men expecting to need at least as many employees as in the record third quarter of 1956, and 10 percent expecting to increase the number of employees.

Adjusts Definition For Air Conditioning

I WAS pleased to receive word from the American Society of Heating and Air-Conditioning Engineers that it had officially added the word "simultaneously" to the definition it uses for air conditioning. The way the definition now reads (and as it appears monthly in *American Artisan*) is:

"Air conditioning is the process of treating air so as to control simultaneously its temperature, humidity, cleanliness and distribution to



New Arno DUCTAPE Speeds Insulation Jobs

Cost savings at your finger tips! As quickly as you can unroll and press Arno Ductape against the job—it's done. This sturdy tape sticks instantly and permanently to metal, paper, wood and plastic. Its holding power is not affected by heat, cold or moisture. Both flame-resistant and non flame-resistant types available. Try Ductape on your next job.



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ADHESIVE TAPES, INC.

Sales Offices

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Detroit—12915 W. Eight Mile Rd.
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Los Angeles—3225 East 46th Street
Minneapolis—401 Plymouth Ave.
New York—104 West 17th Street

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Please send me a free 15 ft. sample flame-resistant ☐ non flame-resistant ☐

I am a Distributor ☐ Contractor ☐

Name

Company

Address

City State

*Subsidiary of The Scholl Mfg. Co., Inc.

the editor's notebook

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meet the requirements of the conditioned space."

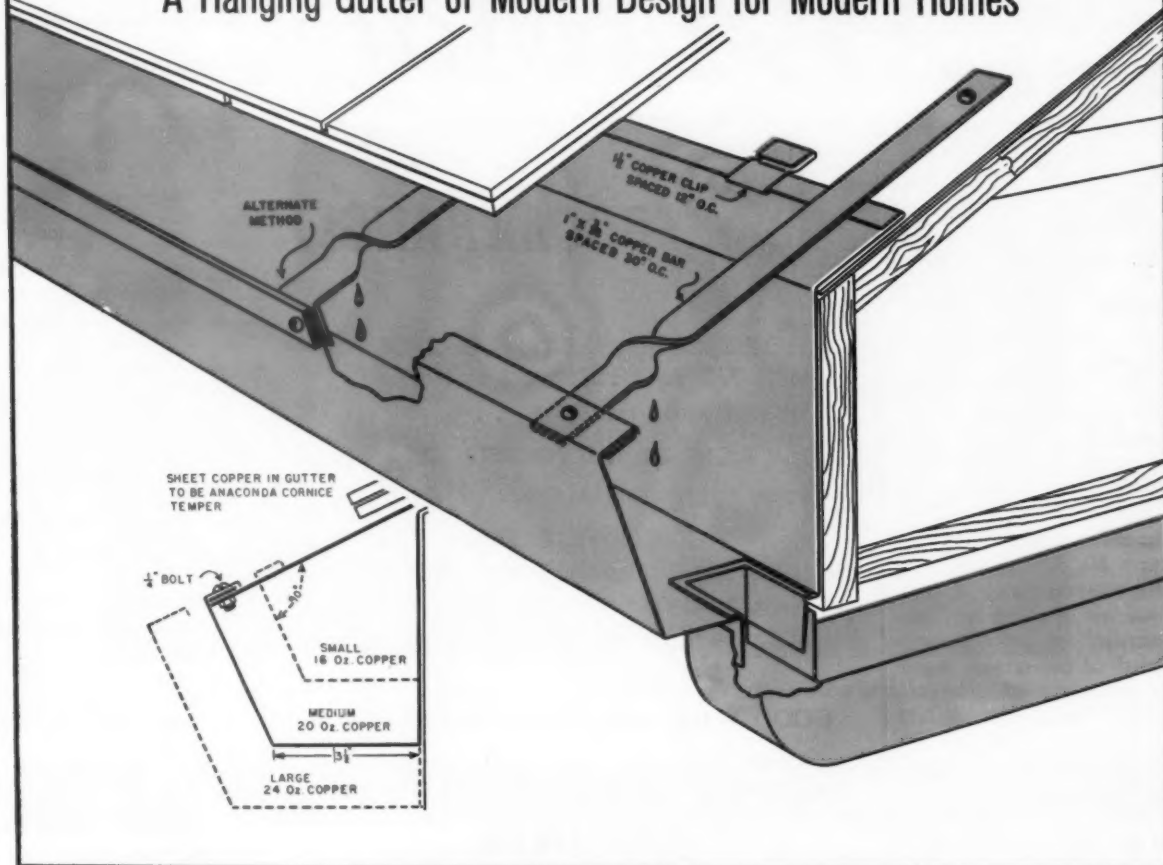
To me this ties the function of air conditioning equipment to well designed and installed systems. Any other type of installation cannot qualify as an "air conditioning system." Why not use this definition in your sales conversations? I'll bet you'll be surprised at the response the prospect will show.

(P.S. — I've tried it on my friends and am pleased to find the public is interested in just what the term "air conditioning" actually means.)

Cites Value to Dealer Of Full Time Salesman

DURING a conversation participated in by a number of industry people who were attending a summer convention in Colorado Springs, the talk turned to the new laws being passed by Congress. One fellow remarked that he wished Congress would pass a law that every heating and air conditioning dealer would have to hire at least one full time salesman. He felt that those dealers who now do a large part of their own selling would be free to put more time into the management side of their business if they had salesmen on their staffs. He has a good point. It might be possible to quote lower prices by keeping sales costs down, but this same practice might also be responsible for losing more profit than the sales costs would amount to. It might be a good idea to look into the cost of adding a salesman to the staff so that you might have more time to keep an eye on the other end of the business. There are a lot of little things that slip by, carrying a good bit of the profit with them.

A Hanging Gutter of Modern Design for Modern Homes



Here's one way to make a hanging gutter match the clean, simple lines of modern house design

Contemporary house design calls for a new kind of hanging gutter. The drawing shows a copper gutter which can be easily formed on regular sheet metal shop equipment and has the straight lines and plain surfaces most suited to today's style of house design.

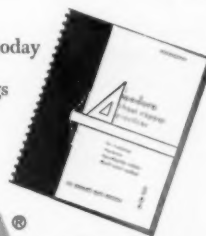
The gutter, being copper, can be set dead level and is installed tightly against the building or overhanging cornice. It is formed so that the apron has the same pitch as the roof and so that the outer edge is in line with the roof slope. If painted, it will appear to be an integral part of the house construction.

Note that two ways are suggested for forming the outer edge and reinforcing it with a copper bar. The gutter is supported by copper clips at the apron edge, and the outer edge of the gutter is held in line by copper bars; each bar is fastened to the roof at only one point. This method allows the gutter to move freely longitudinally during expansion and contraction of the metal. The inset detail shows copper sheet thickness recommended for three common sizes.

Copies of this drawing with suggested specifications are available on request. Ask for Modern Gutter Detail.

5627

DO YOU HAVE THIS NEW BOOK? Send today for your free copy of "Modern Sheet Copper Practices"—104 pages of drawings and suggested specifications.



for better sheet metal work

ANACONDA[®] COPPER

The American Brass Company, Waterbury 20, Conn.
In Canada: Anaconda American Brass Ltd.,
New Toronto, Ont.

Please send "Modern Sheet Copper Practices" ☐
Modern Gutter Detail ☐

NAME.....
COMPANY.....
STREET.....
CITY.....ZONE.....STATE.....

the editor's notebook

(continued)

In 20 Years 6000% Increase in AC Sales

TREATING the huge field of air conditioning as one industry, Cloud Wampler, chairman of the board of Carrier Corp., had these very important comments to make:

"In the majority of our markets air conditioning is now accepted as an economic necessity.

"It is imperative that the lure of the low bid be balanced by considerations of operating costs, maintenance and adequate results."

Outlining the growth of the industry over the past 20 years, Mr. Wampler reported that between 1936 and 1956, total air conditioning sales increased by 6000 percent. Based on the current degree of market saturation, he concluded, "despite its 60-fold increase in two decades, air conditioning is still on the lower reaches of its growth curve . . . the ripe markets of the future will undoubtedly make current records appear small by comparison."

Service Department Can Be Real Money Maker

SOME of the problems most often encountered in the service department deal with obsolescence of equipment. High labor costs are involved in attempting to repair out-of-date equipment and long delays are often incurred in obtaining replacement parts for older models. I was glad to read that a survey had been conducted by Dun's Review and Modern Industry on this subject. It found the following procedures to be trends and it indicates to me that dealers who will look into the function of their service departments for ways to instigate a similar operation will develop better relations with their customers



YOU AND YOUR CUSTOMERS SUFFER

WHERE IT HURTS THE MOST . . .

RIGHT IN THE POCKETBOOK

WHEN YOU BECOME A VICTIM OF

"PRICE SQUEEZE TACTICS"

Give your customers the merchandise
and service they want and they'll
give you . . .

GOOD WILL AND GREATER PROFITS

YOU CAN DO THIS BY DOING BUSINESS WITH

ANCHOR

- Warm air, wet heat and air conditioning
- A brand name of quality since 1865
- Protected franchises
- Assurance of continuing customer satisfaction

DON'T BE HURT IN THE PRICE SQUEEZE

Buy ALL your heating and air conditioning equipment from one source . . . America's Oldest Manufacturer of a complete line of heating and air conditioning equipment.



ANCHOR

Since 1865

Division of Stratton & Terstegge Co., Inc.

P. O. Box 311

New Albany, Ind.

the editor's notebook

(continued)

and find numerous sales leads. The survey reported:

"Perhaps the best way to keep service costs down on obsolete products is to keep them from coming home to roost. This can be done by encouraging trade-ins and supplying changeover kits for servicemen so they may do as much of the work as possible on the job. This means providing them with complete and detailed service manuals. Servicemen should be encouraged to salvage as many old parts as possible from equipment that is turned in; and they should make sure that, when repair work is done, it is as complete and lasting as possible.

"Servicing and repairing old equipment is often a major expense for the dealer, but refusing to repair it can be even more costly in customer good will."

I believe developing these points will help dealers to convert profitless service departments into money making sources.

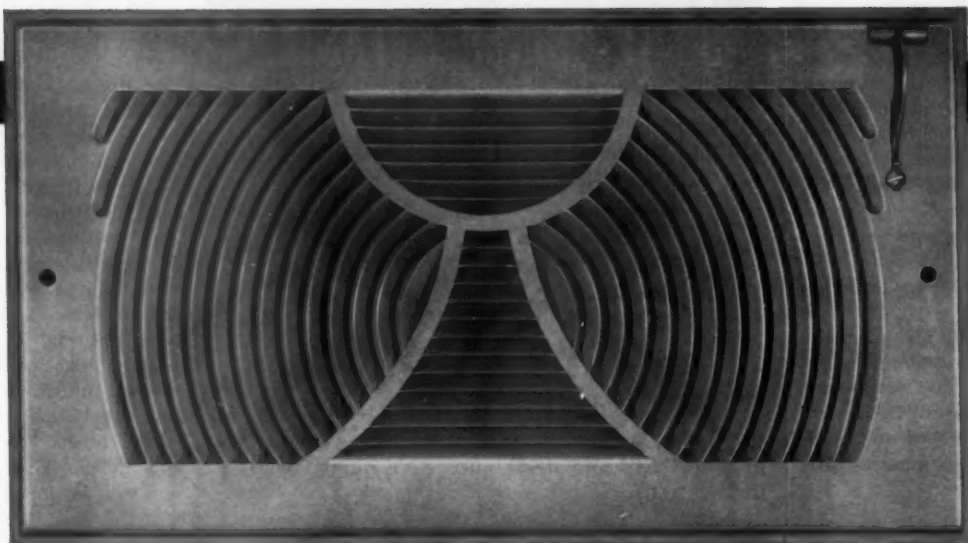
Program Calls For Cooling Dealer Homes

FOR THE PAST several months, we have been urging dealers to equip their homes and places of business with central air conditioning (see Artisan's "Seller—Owner—User Certificate" offer on page 64 of this issue) on the conviction that they could do a better job of selling the comforts of cooling if they lived in such an environment themselves.

This idea has caught on considerably. Among the manufacturers who approve of it is the Airtemp Div., Chrysler Corp. J. F. Knoff, vice president, sales, said:

"Every dealer and distributor selling air conditioning should live in an air conditioned home. The time has

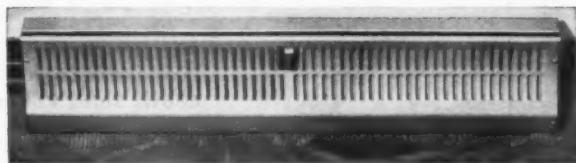
MIDCO'S *New* SIDE WALL PERIMETER DIFFUSER



PATENT NO. D179-140

No. 800 is the last word in sidewall perimeter heating. Has volume control adjustment. Furnished in 10"x6", 12"x6" and 14"x6" sizes.

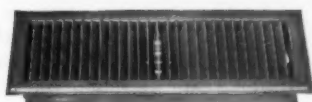
CONSIDER THESE EXAMPLES OF MIDCO'S *Complete LINE*



No. 900 OPEN TOP DIFFUSER

(Also made with closed top)

LENGTHS	FREE AREA
17 inches	30 sq. in.
24 inches	43 sq. in.
30 inches	54 sq. in.
36 inches	65 sq. in.



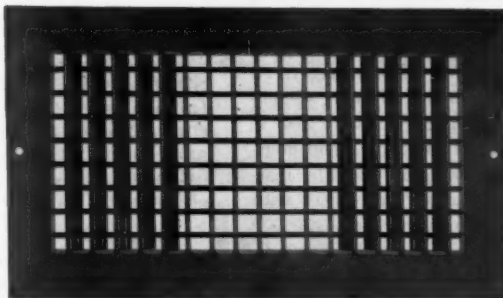
No. 512 PERIMETER FLOOR REGISTER

Sizes:

2 1/4 x 10	4 x 10	6 x 10
2 1/4 x 12	4 x 12	6 x 12
2 1/4 x 14	4 x 14	6 x 14

No. VHD COMMERCIAL MULTIPLE DEFLECTION REGISTER AND GRILLE

Aero dynamically correct 11/16 inch adjustable vanes give positive control of throw and flow.



MIDCO

REGISTER CORPORATION

1059 GRAND AVE. ST. PAUL 5, MINN.

Makers of over 6000 different register units

the editor's notebook

(continued)

come for all seeking to win a greater acceptance of residential air conditioning to know its benefits first hand.

"We intend to set an industry example by encouraging every one of our dealers and distributors to air condition their homes."

In disclosing details of the program, Mr. Knoff said that special prices would be given dealer and distributor principals ordering residential air conditioning equipment for personal use. The plan also includes air conditioning for the dealer or distributor's place of business. Dealers are being encouraged to install their cooling systems as early as possible.

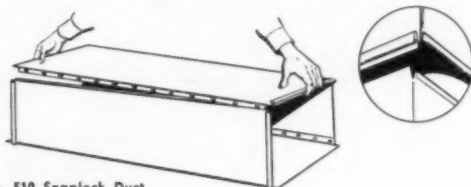
1957 To Be Big Year For Central Cooling

IT'S PLEASING to see manufacturers make plans for expanding their factories to handle larger orders for residential air conditioning. It bears out our editorials published early in 1952 when we pointed out that a new era was getting underway and that the market would grow more rapidly than people would imagine. Recently, in an address given at New York City, H. N. McMenimen, Jr., sales manager, air conditioning division, General Electric Co., said that in spite of the decrease in housing starts this year, the market research specialists with his company expect 230,000 central residential air conditioning systems to be installed during 1957.

He pointed out that the drop in housing starts is not a major determinant in the market of home cooling since summer air conditioning's biggest market still rests with the public attitude, which indicates a desire that more of the new homes built

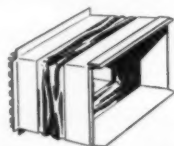
CHAMPION FURNACE FITTINGS DO IT BETTER & FASTER

PRECISION-MADE FITTINGS INSURE A
SNUG, PERFECT FIT EVERY TIME.

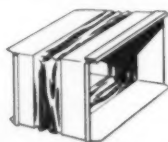


No. 510 Snaplock Duct

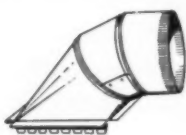
Rectangular Duct—Snaplock assembly with snaplock "S" clip and drive clips give quick, positive installations.



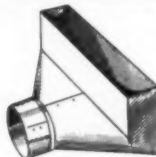
No. 502 Plenum Starter.
Plenum to Trunk Fire Resistant



No. 503 Canvas Duct Connector



No. 585 Universal Adjustable Take-off—Top or side



610 — 90° Angle Register Boots

Strong, rigid CHAMPION fittings are machine fabricated — pipe, elbows, ducts and fittings are completely standardized. Special, sturdy cartons and sound packing provide extra protection for fittings . . . save time and storage space . . . speed shipments. Carried in stock by leading wholesalers.

Write for the new pocket or desk size Catalog No. 58



CHAMPION

CHAMPION FURNACE PIPE COMPANY

211 Eaton Street

Peoria, Illinois

the editor's notebook

(continued)

in 1957 contain year 'round air conditioning systems.

Mr. McMenimen said, "The residential air conditioning business is a separate and distinct kind of growth industry which is still very young and vigorous. Residential air conditioning has just begun to scratch the surface with less than one percent of the available market sold. Residential air conditioning is a vital part of the electrical industry which is growing at twice the rate of the U.S. economy. The electrical industry, furthermore, is approximately doubling its kilowatt output every 10 years and residential air conditioning will be increasingly responsible for using a large portion of this immense electrical power load."

This sounds good to me and I'm sure that there are many dealers in our industry who are glad to learn of this potential for 1957 and will take steps to obtain their share.

'Successful Look' Boosts Sales Volume

THIS HIGHLY important point was recently brought out by Donald H. Davidson, Mueller Climatrol, at a press conference I attended. It's good advice and I want to pass it along. Mr. Davidson said:

"Dealers must look successful to be successful. People like to buy from successful people."

"Successful appearance depends, in part, on the mechanical functions of business. Calling cards, invoices, letterheads, blank budget forms and other dealer aids are important in giving the dealer an organized, businesslike appearance."

Clyde M. Barnes

EDITOR

Heating is the key to greater cooling sales!

you're ready for summer and winter sales

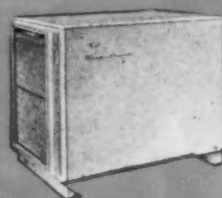


Vertical Cooling Coils
(also Horizontal Coils)

Vertical Gas Fired
and Oil Fired
Upflow Furnaces
(also Downflow,
Lowboy and
Horizontal models)



Air Cooled
Condensing Units



Cooling Coil—Blower Units

with the complete line of matched

Frigidaire heating and cooling equipment

This year, close the sale while the prospect is HOT—often on your first call! And, you stand a better chance of doing just that with the most complete line of Frigidaire furnaces and air conditioners ever offered—plus five brand new direct selling aids.

Styled for today's living, built to build your lasting reputation for quality, these field-proven units are easier to install and easier to service. You'll find combinations to fit nearly every application—gas (any type) or oil furnaces to fit every need and, for that plus sale, cooling equipment that exactly matches the heating unit. To make cooling sales easier, most

Frigidaire furnaces include oversized fan motors or proper pulley and belt combinations as *standard equipment* to assure sufficient air flow for cooling. To simplify installations, all units are scaled to fit through standard doorways. And that's not all . . .

Get all the details on the complete Frigidaire heating and air conditioning line and the five new FRIGIDAIRE direct selling aids from your Frigidaire Sales Corporation or Distributor's office today. Or write Residential Sales Manager, FRIGIDAIRE DIVISION, General Motors Corporation, Dayton 1, Ohio.



FRIGIDAIRE

FULL-HOME

Air Conditioners

PLUS

THESE 5 NEW
SALES CLOSER AIDS



FACT-O-GRAPH describes Frigidaire Full-Home Cooling & Heating benefits, types of systems, product features, operation and maintenance costs, and financing. Shows all facts in easy-to-understand picture-caption style.



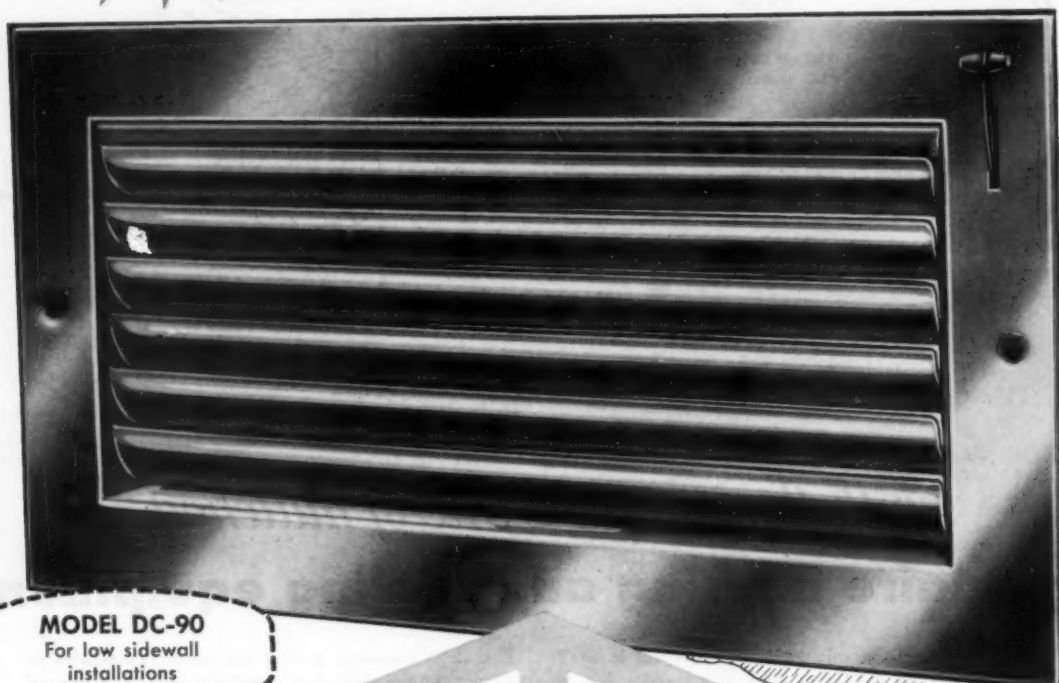
COOLING SELECTOR quickly gives approximate cooling load for any size or type home and PROPOSAL FORM enables you to make survey, proposal, and agreement in minutes.



HEATING SELECTOR quickly gives approximate heating load for most any type home, and PROPOSAL FORM enables you to make survey, proposal, and agreement at prospect's home.

REVOLUTIONARY! LOW COST! MAKES "CONVERTING TO

NEW Converti-



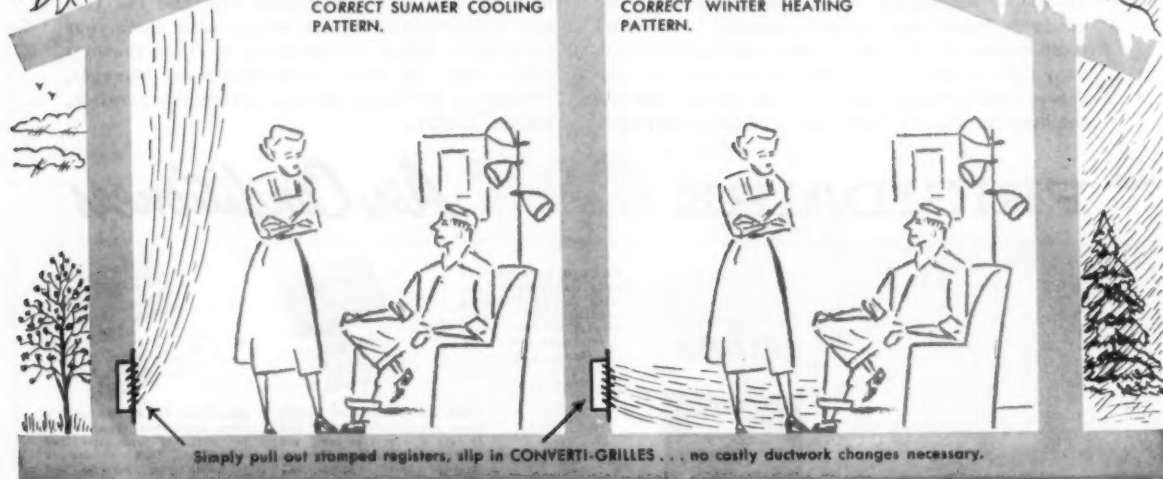
MODEL DC-90
For low sidewall
installations

PAT. PENDING



One simple adjustment moves
all louvers upward for
CORRECT SUMMER COOLING
PATTERN.

One simple adjustment moves
all louvers downward for
CORRECT WINTER HEATING
PATTERN.



Simply pull out stamped registers, slip in CONVERTI-GRILLES . . . no costly ductwork changes necessary.

AIR CONDITIONING" JOBS SIMPLER, EASIER, FASTER!

Grille ^{by} TITUS

- First and only grille of its kind! **SPECIALLY DESIGNED TO REPLACE STAMPED REGISTERS WHEN CONVERTING FORCED WARM AIR SYSTEMS TO INCLUDE SUMMER AIR CONDITIONING.**
- Eliminates costly ductwork changes—just take out stamped registers—slip in Converti-Grilles.
- Fully adjustable, gang operated, curved Airfoil louvers assure **THE CORRECT AIR PATTERNS** for winter heating or summer cooling.
- Built-in, single valve damper adjustable from face of grille.

Get a bigger share of "converting to air conditioning" jobs—**MAKE MORE MONEY**—be sure of **SATISFIED CUSTOMERS**—with Titus New Converti-Grilles.

REMEMBER: Air distribution is the most vital part of any air conditioning system. How it's handled can make or break any of your jobs. **DON'T TAKE CHANCES**—use Titus New Converti-Grilles to replace outmoded stamped registers and be **SURE** you can provide **THE CORRECT AIR PATTERNS FOR MAXIMUM ROOM COMFORT.**

3 IMPORTANT APPLICATIONS FOR CONVERTI-GRILLE

1. Replace stamped registers when adding central air conditioner that hooks up to warm air furnace ducts.
2. Installation of combination units for central heating and cooling.
3. Installation of forced warm air systems with central air conditioning to be added later on.

Model DC-90 CONVERTI-GRILLE available 3 standard sizes in beautiful metalescent finish to fit nearly all old stamped register installations: 10" x 6", 12" x 6", 14" x 6". Also available as Model DC-90B with 7/8" projection flange for baseboard applications. **IMMEDIATE DELIVERY! ORDER NOW!**

MAIL COUPON TODAY FOR SAMPLE CONVERTI-GRILLE—FREE BROCHURE



Converti-Grille

WILL AMAZE YOU!

Get your sample Converti-Grille right away. Hold it in your hands. Examine it. Test it. See for yourself why it's *the* grille to use to replace stamped registers—why it provides superior air diffusion performance for *both* SUMMER COOLING AND WINTER HEATING.

TITUS MANUFACTURING CORP., WATERLOO, IOWA

- ☐ RUSH ME SAMPLE CONVERTI-GRILLE BY RETURN MAIL. Enclosed is my check for \$5.00 to cover cost of grille and mailing. I understand that if I am not 100% satisfied with Converti-Grille, and if I return grille within 10 days after receiving it my money will be refunded.
- ☐ SEND FREE CONVERTI-GRILLE BROCHURE giving complete performance and engineering data, prices.
- ☐ SEND NAME OF TITUS DISTRIBUTOR nearest me so I can place order for CONVERTI-GRILLES.

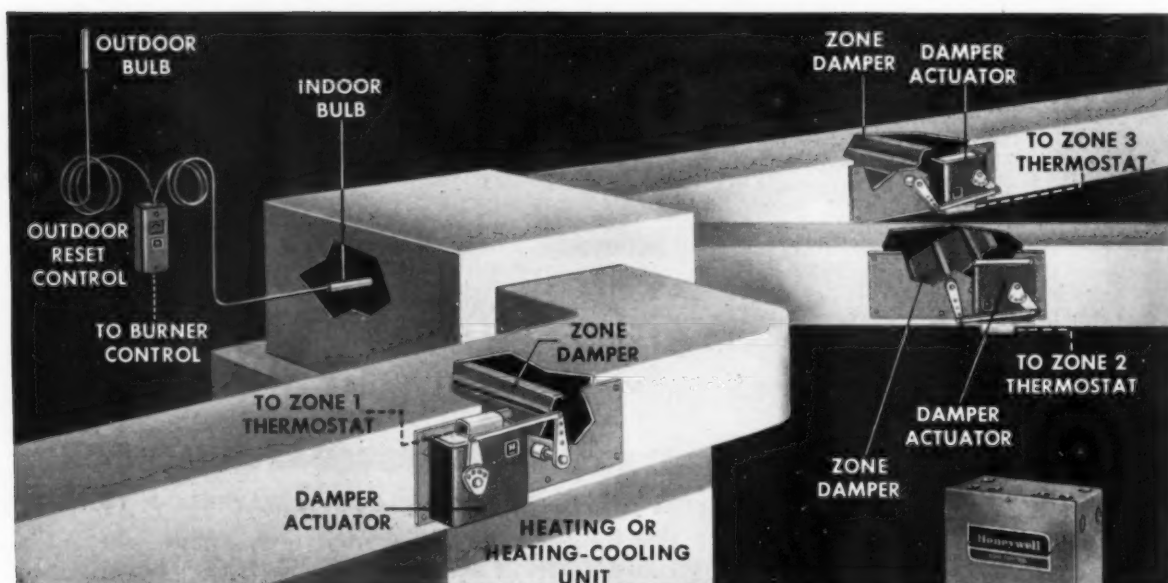
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Address _____

City _____ State _____

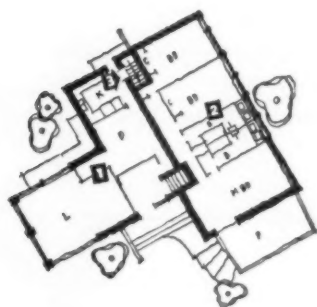
6 BIG PROBLEMS ONE PROFITABLE

...Honeywell Zone



ZONE WIRING PANEL

easily and simply inter-connects all controls.



You can offer zone rebalancing in two or more zones—to fit any need. Honeywell Zone Rebalancing will work with all types of forced air heating-cooling installations—all types of standard or custom homes. Key to the whole system is a Honeywell *Modulating Damper Actuator* for each zone. This actuator operates separate dampers in each of the zone ducts to continuously increase or decrease heated or cooled air volume as called for by the thermostats.

No other system gets as much comfort and efficiency out of a heating-cooling unit. You'll be way ahead in customer satisfaction with this complete heating-cooling job.

WITH ANSWER

Rebalancing

1. Convection between floors in split-level homes
2. Underheated finished basement
3. Spread-out floor plan with exposure differences
4. Controlling supply of heating-cooling to living and sleeping
5. Variable heat gain and loss through picture windows
6. Discomfort in rooms over unheated areas

Any home with any of these 6 comfort problems needs Honeywell Zone Rebalancing—it's the ultimate answer to central heating or heating-cooling installations.

Honeywell Zone Rebalancing means dividing the home into two or more comfort zones. The thermostat in each zone continually adjusts the distribution of heating or cooling to maintain the exact comfort requirement of each individual zone. It's an inexpensive yet unique comfort feature that will enable you to realize an extra profit margin on every job.

Choose from the complete line of the world's most popular thermostats. Here are two examples—



T 86, for heating



T 87, for heating-cooling

MINNEAPOLIS
Honeywell

For complete information on the new Honeywell Warm Air Zone Rebalancing System or details on wet heat zoning equipment, call your local Honeywell office. Or write direct to Honeywell, Dept. AA-7-50, Minneapolis 8, Minn.



Zone Rebalancing

Five easy steps to install the new actuator-damper package which includes the new Honeywell D522A damper, M829 actuator with linkage and the Q401A mounting plate.



Step 1—Determine where the damper is to be mounted and measure for the front and rear bearing surface. Honeywell Zone Rebalancing kit contains all necessary installation parts.



Step 2—By using the cardboard template provided, the damper slot can be cut out quickly and easily.



Step 3—Next, cut the damper to the proper length. The adjustable type damper provided with every kit can quickly be cut to fit any duct easily.



Step 4—Drive the pointed damper shaft through the far side of the duct and insert damper. The mounting plate on the cutaway side is then quickly and easily fastened to the duct to hold damper in position.



Step 5—Mount the Honeywell Actuator on mounting plate and connect the linkage to the damper shaft. The simple, low-voltage wiring is then run to the wiring panel and thermostat to complete the installation.



for IDEAL AIR DISTRIBUTION IN ALL COMMERCIAL AIR CONDITIONING INSTALLATIONS

The H&C No. 16 (step-down type) Ceiling Diffusaire, and its companion piece No. 15 (flush type) Diffusaire give you full 360°, draftless air distribution, particularly important in cooling. And with the H&C ADAPTER SQUARE, which harmonizes perfectly with acoustical tile ceilings, you have the "Round and Square" diffuser problem completely licked. There's no necessity of stocking more than one type diffuser. A butterfly damper with screwdriver adjustability from below is available with these diffusers.

For all other installations H&C TRIPL-AIRE and FIXT-AIRE Registers and Grilles provide every desirable factor entering into the achievement of perfect air conditioning: There are 10 types, 26 standard sizes of single and multi-deflection Grilles and Registers . . . providing 260 possible horizontal and vertical deflection combinations . . . plus a wide range of intermediate sizes. Consequently, there's never a need to compromise . . . the EXACT deflection is always available to you. Perfect volume control, equal distribution over the entire register face, "Decorator Gray" finish and prompt deliveries are other features that contribute to total satisfaction.

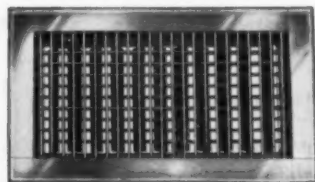
**CONVENIENT CATALOG GIVES COMPLETE DETAILS
AND ENGINEERING DATA. AVAILABLE FROM H&C
JOBBER OR DIRECT FROM US.**



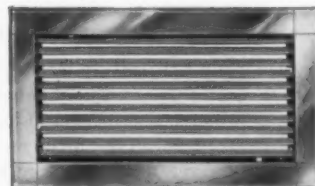
H&C NO. 16 DIFFUSAIRE® . . .



WITH H&C NO. 18 ADAPTER SQUARE



H&C NO. 92 VHV TRIPL-AIRE®
MULTI-DEFLECTION REGISTER. Vertical
face bars, horizontal secondary bars,
vertical louvers.



NO. 94A FIXT-AIRE® GRILLE. Hori-
zontal face bars set at 22° angle to
conceal duct.



HART & COOLEY MANUFACTURING CO.

500 EAST EIGHTH ST. • HOLLAND, MICHIGAN

IN CANADA: HART & COOLEY MANUFACTURING CO.
FORT ERIE, ONTARIO

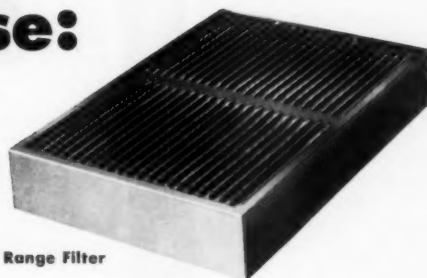




AAF Grease Filter

TWO kitchen filters with ONE purpose:

**protection from fire hazards and
high cleaning costs**



AAF Range Filter

AAF puts *two* tried-and-true products—the Grease Filter and the Range Filter—on the all-important job of eliminating dangerous exhaust grease and reducing maintenance costs in the commercial kitchen.

The Grease Filter is for normal kitchen service. This all-metal filter contains $4\frac{1}{2}$ miles of woven wire media in a unique, vapor-trapping pyramid pocket design. Unit is furnished with individual holding frames or with housing arrangements spe-

cially designed to provide increased filtering surface directly above grease-producing areas.

The Range Filter is for heavy duty, continuous service—where kitchens are operated practically 24 hours a day. It features filtering media consisting of seven stages of herringbone baffles, offering a large surface area on which grease is deposited.

Get all the facts on both filters in
this new bulletin. Use the coupon.



AAF American Air Filter

COMPANY, INC.

355 Central Avenue, Louisville 8, Kentucky
American Air Filter of Canada, Ltd., Montreal, P. Q.



AAF Dust
Control Equipment



AMERglas Replaceable
Air Filters

BETTER AIR IS OUR BUSINESS

Herman Nelson
Propeller Fans



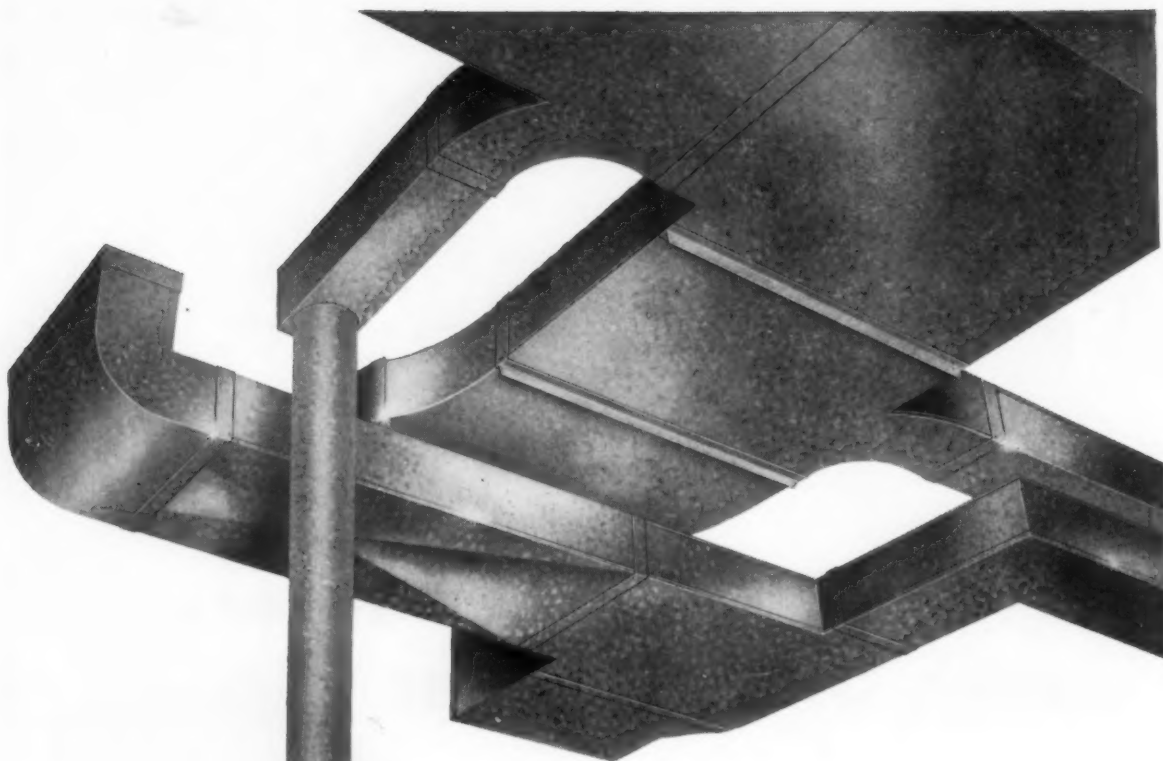
Herman Nelson
Unit Blowers

American Air Filter Company, Inc.
355 Central Avenue, Louisville, Ky.
Please send me Bulletin No. 204-A which describes AAF
Grease and Range Filters for kitchen service.

Name

Company

City State



USS Galvanized Steel Sheets make difficult bends and joints easy

When you use USS Galvanized Steel Sheets for your intricate and difficult ductwork jobs, you will find that these sheets are easy to handle and form, that they assure consistently satisfactory results. USS Galvanized Steel Sheets are uniform in flatness, ductility and finish. They can be cut, bent, soldered, lock seamed and rolled . . . and the tightly-adhering

coating of zinc will not chip or flake or crack.

Specify and use economical and durable USS Galvanized Steel Sheets for your next heating and air-conditioning duct installation. For more information on these fine, quality galvanized steel sheets, get in touch with the nearest Sales Office of United States Steel.



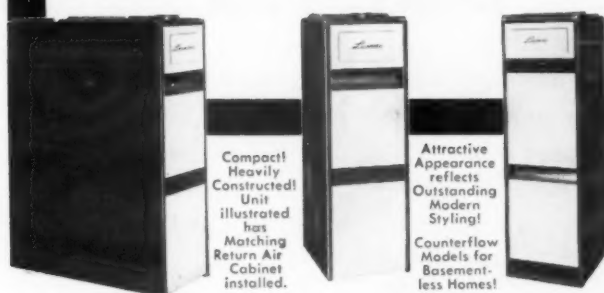
USS GALVANIZED STEEL SHEETS

UNITED STATES STEEL CORPORATION, PITTSBURGH • COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.
UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS, COAST-TO-COAST
UNITED STATES STEEL EXPORT COMPANY, NEW YORK



UNITED STATES STEEL

You pay NO PREMIUM for EXCELLENCE WITH THE NEW Assembled and Wired *Luxaire* GAS FURNACES and OIL FURNACES!



The Price is LOWER for...

Contemporary Design for Today's Building Market

Here are the furnaces that you and your builder, architect and homeowner customers have asked for.

The new Luxaire Gas Fired and Oil Burning Winter Air Conditioners are modern in every respect. They are more compact. They look good anywhere. They have Luxaire's famous durability, for extra years of trouble-free performance. They can be converted for cooling at any time.

Best of all, these all-new Luxaire Furnaces are priced for today's competitive buying — with lower prices that are made possible, not by any reduction in Luxaire's high standard of excellence, but by the most extensive new tooling in Luxaire history.

If you have been losing business in competitive bidding, why not take advantage of the lower prices available for the excellence of new Luxaire Furnaces? See your Luxaire jobber, today!

Gas models, now available, include: 75,000, 100,000, 125,000 and 150,000 Btu input, Upflow — and 75,000, 100,000 and 125,000 Btu, Counterflow. Oil models, are: 78,400 Btu at Bonnet, Upflow and Counterflow — and 112,000 Btu, Upflow.

Greater Eye Appeal One look will convince you that there is no better looking furnace made! Burners and controls are concealed completely within the compact cabinet. Side panels are constructed in one piece with rounded corners. The smooth, glossy baked enamel finish is in two tones of charcoal and light grey, which contrast attractively and harmonize with any room.

Superior Construction Inspection will quickly tell you that the construction is heavier! Heating elements are 16 gauge steel for the Gas and smaller Oil Units, and 14 gauge for the larger Oil Furnace. Supporting channels, drawn deep into the 21 gauge panels, give the cabinet exceptional rigidity. You can feel this extra quality!

Easier Installation Every size and every model of the new Luxaire Furnaces, Oil as well as Gas, is completely assembled and wired at the factory; none remains to be done on the job! Installation consists only of connecting the fuel supply line, ducts and electrical supply.

More Readily Adapted for Cooling

You can add cooling with confidence! The new Luxaire furnaces are designed and constructed with provision to add blower capacity, as needed, to overcome the resistance of the cooling coil and for efficient air delivery.

With Luxaire . . . You Have a Unit to FILL ANY ORDER!



Gas or Oil
Fired Basement
Type Winter
Air
Conditioners.



Gas or Oil
Fired Utility
and
Counterflow
Winter Air
Conditioners.



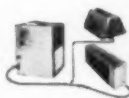
Gas or
Oil Fired
Gravity
Furnaces.



Horizontal
Furnaces.
4 Gas Sizes.
4 Oil Sizes.



Gas Fired
Unit Heaters.
5 Sizes.



Air Cooled
Add-On Summer
Air Conditioners.
2, 3 and 5 Ton
Condenser-
Compressor
Units. Choice of
V Type or Flat
Type Cooling
Coils.



2, 3 and 5 Ton
Combination
Year Round
Air Conditioners.
Gas or Oil Fired.
Air or Water
Cooled.

THE *Luxaire* C. A. OLSEN MANUFACTURING COMPANY . . . ELYRIA, OHIO
HEATING & AIR CONDITIONING UNITS

Your choice of normal or low starting current... with Performance-Rated



HIGH TORQUE, SINGLE-PHASE MOTORS



Capacitor Motors... $\frac{1}{8}$ to 20 H.P. provide high starting torque, high pull-up torque and require normal starting current. They are available in drip proof, dust proof and explosion proof enclosures.

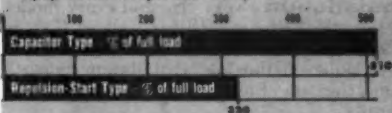
Even if you have severe starting current limitations, you can select the torque you need for sure starts and smooth pull-up to speed from the Century Performance-Rated Single-Phase line (see bar chart below for operating characteristics of two types of Century Single-Phase Motors).

Whatever Your Motor Job . . . there's a Century Motor Performance-Rated to handle it with top effectiveness. Contact your nearby Century branch office or Authorized Distributor.

TYPICAL OPERATING CHARACTERISTICS

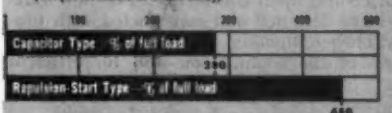
STARTING CURRENT

(Important on Heavily Loaded Circuits)



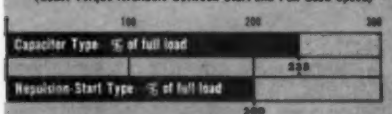
STARTING TORQUE

(Torque Available at Break-Away)



PULL-UP TORQUE

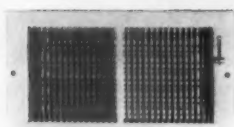
(Least Torque Available Between Start and Full Load Speed)



Repulsion Start, Induction Motors (type RS)... $\frac{1}{2}$ to $7\frac{1}{2}$ H.P. provide very high starting torque, yet require unusually low starting current. They are available in drip proof and splash proof enclosures.

Performance-Rated
Motors
 $\frac{1}{8}$ to 400 H. P.

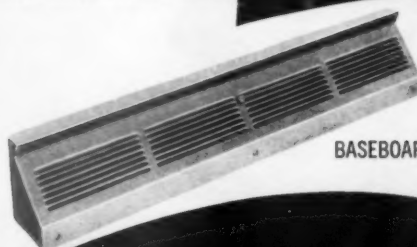
CENTURY ELECTRIC COMPANY



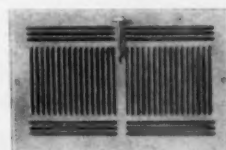
STANDARD 600 SERIES
WALL AND BASEBOARD
REGISTERS



STANDARD CEILING AIR DIFFUSERS



STANDARD B SERIES
PERIMETER
BASEBOARD DIFFUSERS



STANDARD 551
PERIMETER WALL AND
BASEBOARD REGISTERS

STANDARD PH SERIES



PERIMETER FLOOR REGISTERS

5 ways to guarantee comfort in two-way systems!

- easy installation
- trouble-free operation
- the right air distribution for every conditioned space
- for residential, commercial, and industrial buildings
- no blasts, no hot spots, no cold corners



Mail
coupon
for
complete line
catalog!

STANDARD

REGISTERS & GRILLES

... comfort plus style at attractive prices!

**STANDARD STAMPING
& PERFORATING CO.**

3137 W. 49th Place, Chicago 32, Ill.

Please send me your new free catalog.

Name _____

Company _____

Address _____

City _____ Zone _____ State _____

Lou Droste
Droste Heating & Sheet Metal Co.
1956 Natural Bridge
St. Louis, Missouri



It's been proven time and again...

"You can stake your reputation on a Milcor installation!"

Don't take our word for it. Listen to what one prominent sheet-metal contractor, Lou Droste, of St. Louis, Mo., has to say:

"Every time you hang Milcor gutter, you get another satisfied customer. Milcor is made of galvanized steel and that's what it takes to do a real gutter job!

"Each piece fits easily and quickly to the

next, so the job goes up fast. And once it's up, the gutter doesn't get bent out of shape when we lean our ladders against it."

Other successful sheet-metal men agree with Lou Droste. How about *you* — are you using Milcor gutter and accessories, to get good-looking installations every time?

Contact your jobber or our nearest branch.

MILCOR Roof Drainage Equipment



K-Gutter



K-Mitre

Two popular Milcor items in a complete line of gutter, conductor pipe, elbows, and accessories.

INLAND STEEL PRODUCTS COMPANY, Dept. S, 4023 West Burnham Street • Milwaukee 1, Wisconsin

ATLANTA • BALTIMORE • BUFFALO • CHICAGO • CINCINNATI • CLEVELAND • DALLAS • DENVER • DETROIT • KANSAS CITY • LOS ANGELES • MILWAUKEE • MINNEAPOLIS • NEW ORLEANS • NEW YORK • ST. LOUIS

Gas Furnace Sales Show Strong Trend To Higher Capacity

NEW YORK CITY — A strong trend toward higher capacities in gas-fired furnaces is shown in a study by the Gas Appliance Manufacturers Association of sales over a five year period. The study covers total production, for both new home and replacement markets, from 1952 through 1956.

A larger proportion of production in recent years has gone into units of greater Btu input. The smallest sizes, as measured in heating capacity, show the largest declines in percentages of total production. However, sharp gains in over-all production meant that in almost every category the number of units shipped actually increased.

Keith T. Davis of the Carrier Corp., chairman of GAMA's furnace division, pointed out that during the period studied gas-fired furnaces of 75,000 or more Btu input increased from 62.3 percent of shipments to 77.2 percent. Shipment of 812,600 gas-fired furnaces in 1956 compares with a total of 463,700 in 1952.

Mr. Davis said the factors behind the trend toward higher capacity units included: 1) an increase in the average size of new single-family homes, 2) an upgrading of heating standards and a tendency to extend outlets to sunporches, basements and other areas not always included previously, 3) addition of rooms to existing houses and the increased use of basement areas for living.

Achenbach Heads NBS Heating, Cooling Section

WASHINGTON, D.C. — Paul R. Achenbach has been named chief of the newly reorganized Air Conditioning, Heating and Refrigeration section in the Building Technology Division of the National Bureau of Standards.

Estimates of '57 House Starts Jump as Building Picks Up

WASHINGTON, D.C. — The month of May saw the annual rate of new housing starts hit the highest level of the year. The increase over the previous month was greater than would be expected seasonally.

Carrol M. Shanks, president of the Prudential Insurance Co. of America, predicted that housing starts this year will reach 1,100,000. This number is close to the total last year. Federal housing officials were quoted as estimating new starts this year at between 900,000 and 1,000,000

units. Earlier in the year, industry officials were predicting a total of new starts as low as 800,000.

In May 96,000 units of private housing were begun, representing an annual rate of 990,000 units. The May total of new public and private units combined was 11 percent higher than April; however, the total was still 10 percent below a year ago and was the lowest for the month of May since 1951.

Total starts for the first five months of 1957 were about 15 percent below the comparable 1956 figure. The entire drop was in privately owned housing. The five-month total of public units was at a four-year high.

Announce Tentative Short Course Plans

CLEVELAND, OHIO — A meeting of the short course committee of the National Warm Air Heating and Air Conditioning Association held here set a tentative schedule for courses to be held in 1958. The courses are planned as follows:

Jan. 22-25 — Pennsylvania State University

Feb. 3-5 — Washington University

Feb. 3-6 — Oklahoma A & M College

Feb. 3-6 — North Carolina State College

Mar. 17-20 — Purdue University

Mar. 25-28 — Michigan State University

Apr. 2-5 — Syracuse University

Apr. 7-10 — University of Omaha

Apr. 14-17 — State University of New York Institute

Apr. 21-24 — Northeastern University

Apr. 28-May 1 — University of Connecticut

Additional short courses are being considered for various other sections of the country. The dates for the courses will be confirmed as quickly as possible.

Economy Still Strong, Commerce Dept. Reports

WASHINGTON, D.C. — The general business situation continued strong in the opening months of 1957, the Office of Business Economics, U. S. Department of Commerce, reports. An extension through April of the firm tone in the overall economy is indicated by the latest data for personal income and other factors.

In total, the flow of goods and services into all segments of the national market increased \$8 billion (at annual rates) over the final quarter of last year. More than half of the dollar increases in purchases by the ultimate consumer represented a further growth in real volume. The remainder was accounted for by a continued rise in average prices.

Business firms during the first quarter purchased fewer goods in relation to their volume of sales, with the result that inventories did not increase. This reduced some of the price pressures in wholesale markets.

(More news on page 26)

Women at Chicago Meeting Praise Central Home Cooling

CHICAGO — Women who live in houses with central cooling told what they like and dislike about summer air conditioning in a meeting sponsored by a manufacturer of heating-cooling systems. As reported by the Chicago Tribune the women had more to praise than condemn in the discussions.

One woman among the 25 attending the meeting noted that she had to call a serviceman several times just to identify the various switches and buttons that switch her system from heating to cooling. She suggested better marking of controls.

Company Buys Rights To Large Furnace Line

YORK, PA. — The Furnace Division of Jackson & Church Co., Saginaw, Mich., manufacturer of commercial and industrial warm air furnaces, has been purchased by York-Shipley, Inc. The acquisition includes manufacturing rights for industrial and commercial furnaces ranging in capacity from 115,000 to 5,000,000 Btuh.

Mr. S. H. Shipley, president of York-Shipley, said that the added line of equipment will be manufactured over his company's present machine tools. "It gives us a fully coordinated line," he said, "reaching into fields we had not previously covered."

The purchase also includes the furnace division of Timco Corp., Tawas City, Mich., wholly owned subsidiary of Jackson & Church.

Richard J. Hoover has been named manager of the new York-Shipley Jackson & Church division. Various key employees have been moved to York. Howard K. Beck, who had been president of Timco Corp. and Jackson & Church Furnace Division, is remaining with Jackson & Church as executive vice president.

A few homeowners with water cooled systems and high water costs complained about high operating costs. They were advised to investigate cooling towers.

The women all had high praise for air conditioned living, some for rather unusual reasons. One who lived in a home close to Lake Michigan and heavily shaded by trees said she wanted air conditioning in the summer not for its cooling effect, since her home had not previously been too warm, but for its dehumidifying effect. Since adding cooling, she has had no further trouble from mildew.

Another said her family is building its second air conditioned home, which will have a minimum of openable windows because they are no longer needed. A fresh air intake is recommended in tightly closed homes such as this one.

Other advantages of air conditioning listed by the women at the meeting included relief of hay fever, better rest, greatly decreased dirt in the house, better appetites, less laundry, and a tendency to stay home more and enjoy it.

One woman said her family added cooling when they found it would be less expensive than building a screen porch. Another said they entertain with barbecues around their basement fireplace rather than in the yard. A third reported that family picnics are held outdoors, but close to the house so the adults can go inside and cool off whenever they wish to be more comfortable.

Several who had worked out operation costs reported they were about the same for cooling as for heating. Another said her electricity bill in July and August was about \$25 higher, but she felt it was worth it.

One home owner who has shaded the sunny side of her house said her cooling bills were lower than her heating bills.

Furnace Clearance Regulation Revised

LOS ANGELES — The city of Los Angeles has announced the adoption of new regulations governing the clearance of warm air furnaces. The three regulations are as follows:

1) All wood framing within six inches of every warm air furnace shall be covered with: $\frac{3}{4}$ in. thickness of plasterboard lath and plaster, or $\frac{3}{4}$ in. thickness of gypsum board or asbestos board covered with sheet metal. Such protection is not required under or adjacent to the blower compartment.

2) Horizontal, blower-type, gas burning warm air furnaces and furnaces which do not have the fan compartment under the furnace shall be placed on four in. legs and all wood flooring under any such furnace shall be protected with: $\frac{1}{4}$ in. thickness of asbestos mill board covered with No. 24 U. S. gage sheet metal, or equivalent fire protection, such floor protection to extend not

(Continued on page 30)

Military Housing Plans To Bring Building Peak

WASHINGTON, D. C. — Construction of military housing units will reach a postwar peak this year with the total running as high as 85,000 units for all branches.

The Army Corps of Engineers has approved 120 projects for a total of 33,600 units, scheduled this year.

Officials of the Army's new Family Housing Division report that contracts for 37 projects totaling 14,649 units have been awarded to contractors. Included in these contracts are housing projects planned for: Fort Knox, Ky., 2042 units; Fort Polk, La., 2000 units; Fort Bragg, N.C., 1500 units; Schofield Barracks, Hawaii, 1326 units; Fort Benning, Ga., 1000 units, and Fort Meade, Md., 1000 units.

(More news on page 30)



Performance of **REVERE-KEYSTONE*** 2-PIECE CAP FLASHING

on Milliken power station resulted in its being re-specified on many additional jobs

When the Milliken Station of the New York State Electric & Gas Corporation at Ludlowville, N. Y., was in the design stage a set of plans was submitted to Revere's Technical Advisory Service for comments and suggestions.

After careful examination Revere recommended that the Thru-Wall Flashing required should be installed in accordance with procedures recommended in the Revere Manual, "Copper and Common Sense." For the cap flashing the new Revere-Keystone 2-Piece Cap Flashing was recommended.

These recommendations were accepted by Gilbert Associates, Inc., and the installation made. The results were so satisfactory that they have been re-specifying this 2-Piece Cap Flashing, wherever practical. Here are the reasons:

FREE WALL—It provides the roofer with an unobstructed wall

face for the placement of the base flashing. Receiver is laid in during construction of wall, while the insert is snapped in only after all roof and base flashing work is finished.

STRAIGHT CLEAN LINE, PERMANENT GOOD LOOKS—Factory-bent to precise dimensions.

PERFECT WEATHER-SEAL—Factory-formed angles on the receiver and insert cause latter to hug the base flashing, weather-seal effectively.

NON-LEAKING DAMLOCK—Requires no soldering except for special conditions.

CAN BE DISASSEMBLED—Insert can be removed with a simple tool and used again, with no loss of neatness or snugness, when the built-up base flashing or roofing has to be repaired.

*Patent No. 2,641,203 Other Pats. Pending.

REVERE COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801
230 Park Avenue, New York 17, N. Y.

Mills: Rome, N. Y.; Baltimore, Md.; Chicago, Clinton and Joliet, Ill.; Detroit, Mich.; Los Angeles, Santa Ana and Riverside, Calif.; New Bedford, Mass.; Brooklyn, N. Y.; Newport, Ark.; Ft. Calhoun, Neb. Sales Offices in Principal Cities, Distributors Everywhere.



INSET AT LEFT SHOWS detail of Revere-Keystone 2-Piece Cap Flashing with combination receiver and Thru-Wall Flashing. Receiver is furnished in 49" lengths (48" layup), with 1" interlocking tongue which assures proper alignment. A standard 4" flat copper receiver with 1/4" hook dam is also available.

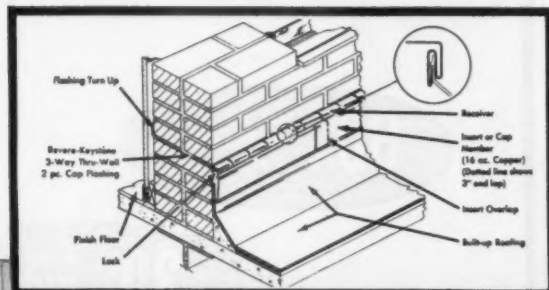
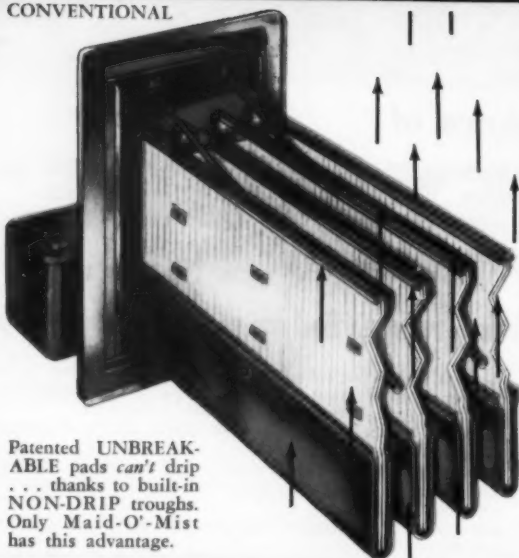


PHOTO SHOWS neat-appearing, tight-hugging, easy-to-install Revere-Keystone 2-Piece Cap Flashing completely installed. There were about 3,000 sq. ft. of Revere-Keystone 2-Piece Cap Flashing and 3-Way Thru-Wall Flashing, both plain and lead coated, used on this building housing a 135 megawatt unit which was put into operation in June, 1956.

MORE AND MORE CONTRACTORS ARE INSTALLING MAID-O'-MIST *Automatic* Convactor HUMIDIFIERS

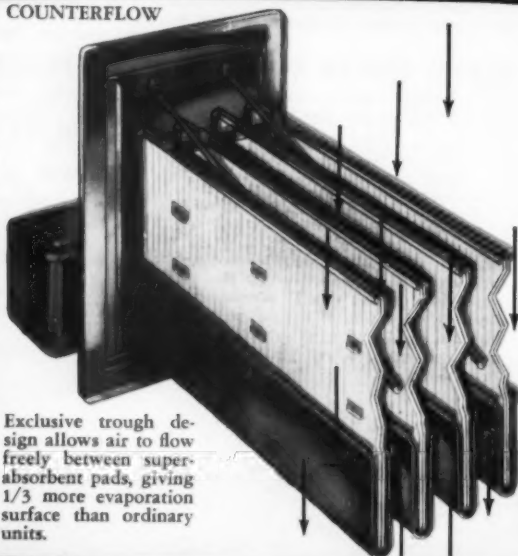
Saves *half* the time to INSTALL! Gives a *third* MORE EVAPORATION AREA!
Has *two-thirds* LESS AIR RESTRICTION IN THE PLENUM!

CONVENTIONAL



Patented UNBREAK-ABLE pads can't drip ... thanks to built-in NON-DRIP troughs. Only Maid-O'-Mist has this advantage.

COUNTERFLOW



Exclusive trough design allows air to flow freely between super-absorbent pads, giving 1/3 more evaporation surface than ordinary units.

GIVES MOST FOR LEAST

While a Maid-O'-Mist humidifier gives lasting satisfaction to the customer, it costs very little. Actually, it gives more humidity per dollar cost than any humidifier on the market.

Fits Both Conventional and Counter Flow Warm Air Furnaces

The only standard unit that does! Perfect for small plenums, easy to install. No flat bottom pan to block flow of air. $\frac{3}{8}$ " individual troughs, spaced an inch apart to allow free airflow between evaporator pads, give a THIRD MORE EVAPORATING SURFACE.

Something NEW! RENEWAL KIT

with evaporator pads and valve stem. Easy for home-owner to install himself. Eliminate service calls. Ask your jobber or write us for details.

WRITE FOR FREE CATALOG TODAY.

60% LESS AIR RESTRICTION IN PLENUM

30% MORE EVAPORATION AREA

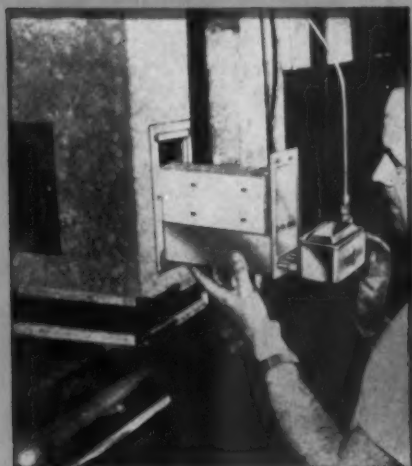
50% LESS INSTALLATION TIME

AUTOMATIC HUMIDIFIERS WATERLINE CONTROLS
AUTO VENTS . . . HEATING AND AIR CONDITIONING SPECIALTIES

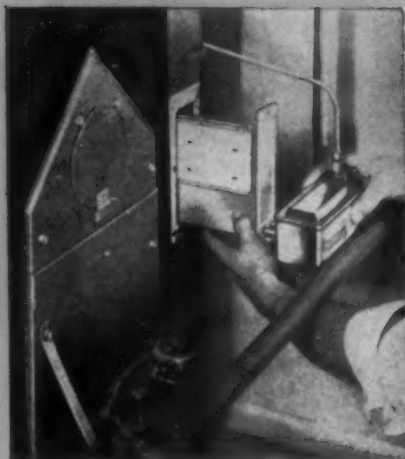
MAID-O'-MIST, Inc.

3217 NORTH PULASKI ROAD · CHICAGO 41, ILLINOIS

The only standard unit that fits both conventional and counter flow systems



FOR CONVENTIONAL warm air furnaces cut opening in plenum and make water connections. 9 sizes available with evaporation capacities of 1 to 10 gals. per day.



FOR COUNTER FLOW, because of its narrow trough design, you can install on either side of furnace having 3" minimum air passage.



For dependable water level control use MAID-O'-MIST FLOAT CONTROL VALVES

Thrifty answer to limited space in
HUMIDIFIERS **AIR CONDITIONERS**
PAN FILLERS **AIR WASHERS**



No. 51

FAMOUS No. 50 SERIES

Compact, precision-designed, you can count on MAID-O'-MIST float control valves to effectively meet your water-level control requirements. An acknowledged leader in its advanced engineering, they give faithful performance.

No. 51 FLOAT CONTROL VALVE

Only 5 $\frac{3}{4}$ " long overall, including copper float 2 $\frac{1}{8}$ " in diameter x 1 $\frac{1}{4}$ " deep. Stem and body made of brass . . . valve seat of hard nylon, protected with fine metal screen. Can be fitted in 9/16" hole or screwed directly into tapped opening. Up to 85 lbs. pressure; 1/2 gal. per minute at 50 lb. pressure.

No. 52

Similar to No. 51, but designed for 1 gal. per minute capacity at 50 lbs. pressure, with pressures to 125 lbs. Overall length, 8", with 1 $\frac{1}{2}$ " x 4 $\frac{1}{8}$ " long float.



No. 52

No. 59

Valve is vertically mounted with special bracket to mount on reservoir or pan well above water line. Just 5" long.



No. 59

No. 6917

Series Diaphragm Valves

Heavy duty, large capacity water level controls, rugged and strong. Capacities 1 $\frac{1}{4}$ gal. to 6 gal. per minute.



No. 69

Get full information from your jobber or write for catalog today!



MAID-O'-MIST, Inc.

3217 NORTH PULASKI ROAD • CHICAGO 41, ILL.

Announce Change in Rules For Next Apprentice Contest

KANSAS CITY, Mo. — At a meeting of the National Joint Apprenticeship Committee held here the national apprentice contest was thoroughly discussed. As a result, the contest rules have been revised so that in 1958 competition will be conducted in four classes.

Some committee members felt that the previous method of conducting a general competition discouraged many local committees from entering their first and second year apprentices.

Under the new rules, apprentices with one, two, three, and four years of training will submit problems in competition with others in their own class. Thus each contestant will receive a problem that is within his range of training and ability.

First, second and third prizes will be awarded in each of the four categories. The four first place winners in their respective groups will receive \$125 each. Second place win-

ners will receive \$50 and third place winners \$25. Each winner will receive an appropriate certificate.

A certificate of merit will also be presented to each school with the winner's name inscribed to be hung in the classroom where he studied, thus giving each winner greater recognition and promoting interest in the national contest.

The committee also selected the four projects for the 1958 contest:

First year problem — square throat curved heel elbow, double seams.

Second year problem — five piece round elbow riveted seams.

Third year problem — curved range canopy-riveted.

Fourth year problem — round weather band ventilator with square to round base.

Report Cites Progress of AGA Research Projects

NEW YORK CITY — The annual report of the American Gas Association revealed that the AGA spent nearly a million and a half dollars in 1956 on various research projects conducted at some dozen institutions. Nearly a half million dollars was spent on summer air conditioning research alone.

The report noted that a record number of publications was completed on domestic and special research projects. Attendance records were set at the AGA's Research and Utilization Conferences held last year in Cleveland and Los Angeles.

Thirteen cooling projects on jet, absorption and engine driven units were pursued during the year, and the most promising were selected for further work. Developments in free piston engines, crank shaft engines, and two improved absorption type systems were mentioned as of particular interest.

Florida Only State To Expand Building Volume Last Year

WASHINGTON, D.C. — In the slackening which characterized the 1956 home building market, only builders in Florida continued to expand their volume, the U. S. Department of Labor's bureau of labor statistics announced recently. At the same time, new home building last year in several states — including Texas, Colorado, and Washington — dropped substantially more than the national average, which was down 16 percent between 1955 and 1956.

According to the report, California led all other states in the number of homes started in the 1954-56 period. Significantly, California also has had the greatest population increase since 1950. New York continued to have the largest population and ranked second in home building volume.

California and two other fast-growing states — Florida and Arizona — were at the top of the list of states in the number of dwelling units started per 1000 population in 1956, with rates of 13.3, 16.7 and 12.6 per 1000, respectively. Rates for these states far exceeded the national rate of only 6.7 new units per 1000.

These contrasting state trends were pointed up in an article introducing the bureau's new series of state estimates of nonfarm housing starts. Only national and regional figures had been published previously. This is a step toward the bureau's goal of developing more detailed geographical information on the volume of new home building. The state estimates will be published on a quarterly basis in *Construction Review*, a joint publication of the Departments of Labor and Commerce.

The initial estimates included 19 states and the District of Columbia, which together accounted for 75 percent of all nonfarm housing started in the 1954-56 period. Additional states will be added when sufficient data is made available.

Los Angeles Changes Furnace Clearance Rules

(Continued from page 26)

less than 6 in. beyond the furnace on all sides.

3) All warm air furnaces shall have the following minimum clearances between the furnace and combustible construction: sides of the furnace, six in.; back of the furnace, six in.; front of the furnace, 18 in.

The first two regulations are presently in effect. The third is effective August 22, 1957. This effective date applies to the date of issuance of the building or heating permit.

The validity of these regulations has been questioned by the Institute of Heating and Air Conditioning Industries, local trade group. Representatives of the Institute are discussing the orders with local enforcement officials.

So quiet...



ROBERTSHAW'S NEW HC-E HI-CAPACITY GAS HOME HEATING CONTROL

Home owners love the silent comfort and convenience when their gas furnace is equipped with the new Robertshaw-Grayson HC-E ! It's two controls in one—automatic pilot with thermomagnetic, 100% gas shut-off, built in pilot filter, pilot adjustment and noiseless positive snap-action gas valve. Robertshaw-Grayson's new "silent watch" actuator works on an entirely different principle to insure positive, noiseless operation. The actuator assembly is factory adjusted to give a 20 second actuating delay . . . eliminates valve stuttering or "cycling". Keeps silent . . . and safe! For more information, consult the capacity chart, fill out and mail the attached coupon !

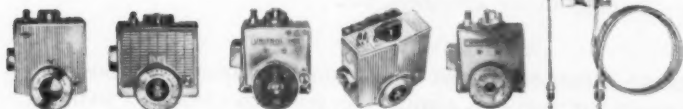
Factory-adjusted 20 second delay stops valve stuttering or "cycling"



Robertshaw-Fulton

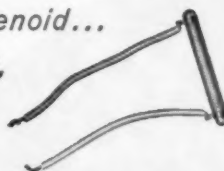
CONTROLS COMPANY

GRAYSON CONTROLS DIVISION
Long Beach, California



UNITROL WATER HEATER & SPACE HEATER CONTROLS • THERMOCOUPLES & PILOTS

New "Silent Watch" Actuator replaces Solenoid... insures quiet, dependable operation!



CAPACITY LISTED BY A. G. A. AT 1" PRESS. DROP CAPACITY B. T. U. PER HOUR

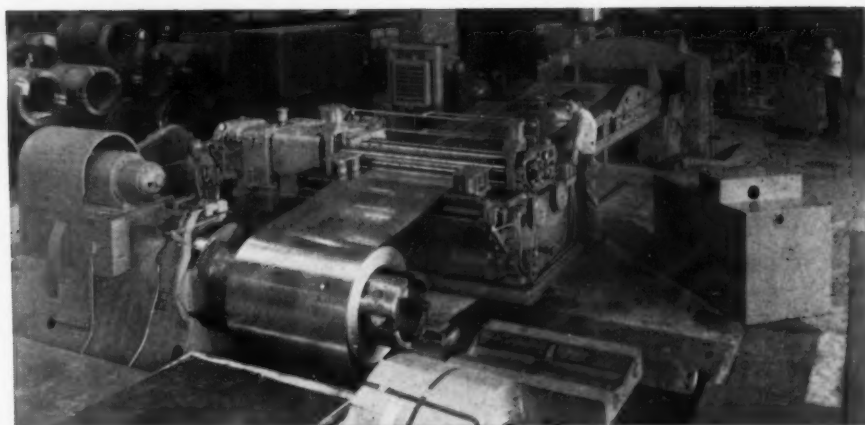
TYP. GAS	GASES B. T. U. PER CU. FT.			
	LESS THAN 800		MORE THAN 800	
	$\frac{1}{2} \times \frac{1}{2}$	$\frac{3}{4} \times \frac{3}{4}$	$\frac{1}{2} \times \frac{1}{2}$	$\frac{3}{4} \times \frac{3}{4}$
NAT.			254,000	315,000
MFD.	172,000	213,000		
L.P.			543,000	672,000

For more information...mail today!

**ROBERTSHAW-FULTON CONTROLS COMPANY
GRAYSON CONTROLS DIVISION
LONG BEACH, CALIFORNIA**

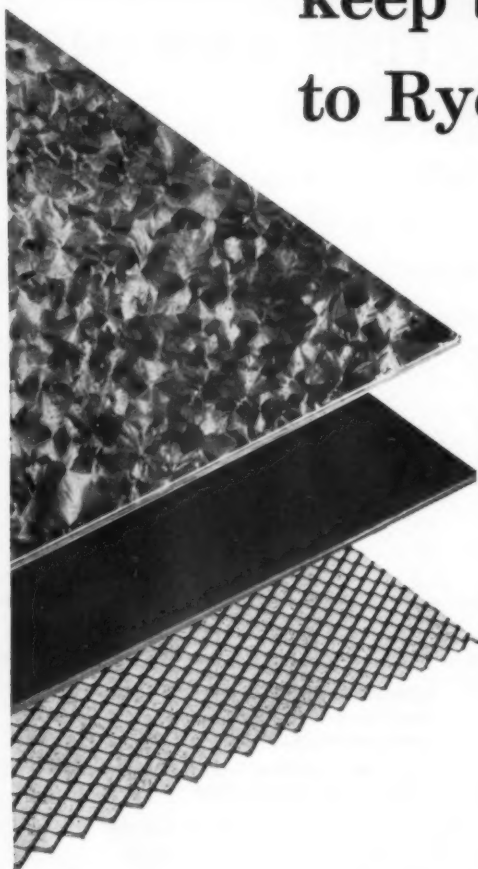
Please rush me additional information concerning the new HC-E Hi-Capacity gas home heating control.

Name _____
Company _____
Title _____
Address _____
City _____ Zone _____ State _____



SHEET METAL MEN TELL US . . .

3 major reasons keep them coming back to Ryerson:



- 1. Biggest stocks—nobody comes even close to the size and variety of Ryerson inventories.**
- 2. Unequalled processing facilities—assuring fast, accurate service on any requirement.**
- 3. Dependable, certified quality—at fair prices—whether steel is plentiful or scarce.**

RYERSON STEEL

Principal products in stock: Sheets of every kind—carbon steel, stainless, expanded metal, etc., bars and band iron, tubing, angles, channels, etc.

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • WALLINGFORD, CONN. • PHILADELPHIA • CHARLOTTE • CINCINNATI
CLEVELAND • DETROIT • PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

Now It Can Be Sold (Quality, that is)



STANDARDS OF HEATING system performance have been available for some 20 years—ever since the National Warm Air Heating and Air Conditioning Association published its first set of manuals as a guide to better installation. There have, of course, been many changes since the manuals first became available—but at the time any manual was published it was the most effective procedure known to get the most out of a warm air heating system.

The manuals in use today are the result of almost 40 years of research and field experience. They represent accepted procedures for engineering, installing and balancing warm air heating systems. Any system designed and adjusted according to the current manuals will perform at peak efficiency as we know it today. Time will see changes in the methods used and outlined by NWAHACA manuals, but as more research data, better methods of distributing air and new products are developed, the manuals will keep pace with accepted practices that result in the best performance that can be obtained from the equipment.

It is the responsibility of every member of the industry to sell the advantages of the best system that can be installed. This is where standards of heating system performance enter the picture. Few dealers and their salesmen have tried to sell all the advantages of a GOOD heating system. The following special section shows how the industry can use its set of standards to sell GOOD heating systems.

Some are already putting this information to use.

A Columbus, O. dealer intends to include the 12 listed standards on his contract form.

A Middletown, N. Y. dealer uses the points made as sales tools to show why a good warm air heating system is better than any other type.

The Milwaukee association has used the standards in the WHAM campaign to inform the public about the kind of heating system they have a right to expect when they remodel or buy a new house.

Here are the tools that can be used to sell the kind of heating system which will mean complete comfort for the customer and which in turn will net a fair profit for the dealer who takes the time to explain to the prospect what can be done for him and how it can be done in only one way—the RIGHT way.

The days of low profit margins are past if dealers and their salesmen will use such standards of heating system performance as sales tools. The way to better heating and better profits is here; it is up to all of us to apply the valuable information the industry has at its fingertips. Use the means outlined in the following pages to push home the idea of installing only GOOD heating systems.

American Artisan's Dealer Panel of Editorial Consultants

The men pictured here are outstanding dealers who were selected as members of American Artisan's Dealer Panel of Editorial Consultants. They were asked by the editors to review in advance this special section on heating system performance standards. Their valuable comments, summarized on this page, point out the impact these standards can have on the entire industry's sales outlook

Here's What Dealers Have To Say About Artisan's Heating Comfort Standards



JAMES H. WELCH, THE WELCH CO., VALDOSTA, GA.: Congratulations on a job well done in the writing of this special section. I have read innumerable books, editorials, etc., designed to aid in selling, but this is the most comprehensive and to the point presentation I have ever read. I shall certainly use this tool.



JOSEPH C. STARK, STARK HEATING CO., BEAVER FALLS, PA.: This sales tool will be a boon to the dealer if properly used. I believe this to be the greatest step offered for educating the public on what to expect when buying a heating system. It is my pleasure to endorse the program completely.



F. T. FAHRINGER, JOHN G. WEBSTER & SONS, WASHINGTON, D.C.: I fully agree; our industry needs to sell quality. However, I am not sure the standards will achieve the intended purpose. I think the interested associations should work on educating the public. I just don't believe that the dealer can do the whole job alone and by direct contact with home owners.



JOHN G. DE HAAN, DE HAAN HEATING AND ROOFING CO., KALAMAZOO, MICH.: The answer to our problem is a program to educate the public to ask for and demand better heating. A set of standards such as these can well be used as a foundation for such a program. The standards and the standards story, as you have presented it, can be and is a terrific sales tool.



LARRY INGHAM, AIREFLOW HEATING CO., CHICAGO: I have been trying to sell with the comfort story for a long time, but I've never had a useful tool like the standards card to help do the job. If a dealer would use this card he would have an easier time explaining why quality costs more and would close more sales at better profit.

ROBERT P. JOHNSEN, ATOMATIC, INC., CHICAGO: The standards section is very good. It must be up to the dealer to point out to his heating prospects that temperature variations are as much a function of the house construction as of the heating system. It will be difficult to meet some of these standards where single glass and uninsulated walls exist.



DONALD E. SULLIVAN, SOUTHLAND HEATING AND AIR CONDITIONING, INC., LONG BEACH, CALIF.: You are to be congratulated on your positive approach to the problem of selling quality in our industry. This method of comparison is excellent. I strongly suggest that another section be prepared on cooling.



WILLIAM E. GARBER, JR., FARQUAR-GARBER CO., INDIANAPOLIS, IND.: I am greatly enthused about the approach, presentation and use of the proposed standards. We, who are in the industry, have been groping for such standards, which can't help but elevate our industry.



BERNARD LAWRENCE, KALAMAZOO SALES AND SERVICE, GREENVILLE, PA.: I heartily approve of the general idea of customer and dealer education and believe it should have a far reaching effect on future warm air heating sales and installations. However, I believe that some of the terminology may be a bit technical for the average individual to grasp.



E. J. FRENCH, KALAMAZOO HEATING AND APPLIANCE CO., KALAMAZOO, MICH.: This material has been well prepared and I feel sure that it will be read by as many people as any other feature you have ever published. It is timely. I would recommend including a suggested presentation of the standards point by point to an assumed prospect.



RICHARD W. FRIDAY, RICHARD W. FRIDAY CO., ROCHESTER, N.Y.: Until we educate ourselves to sell quality against price competition we will continue to have a rough time. I think the idea of a card showing the various standards is good.



AMERICAN ARTISAN, the magazine of residential air conditioning, warm air heating and sheet metal contracting, presents here a set of standards based on proposals by industry authorities. These standards are given in non-technical terms to explain the comfort conditions that can be expected in a home, and can be used to evaluate the performance of a proposed warm air heating installation

Standards for Rating Heating Systems

POINTS TO CONSIDER	GOOD SYSTEM	FAIR SYSTEM	POOR SYSTEM
Room air temperature variations	Less than 2 degrees shown by thermometer on a table in middle of room	Between 2 and 4 degrees (shown by thermometer on a table in middle of room)	Over 4 degrees (shown by thermometer on a table in middle of room)
Temperature variation between rooms	Less than 2 degrees between coolest and warmest rooms	Between 2 and 4 degrees between coolest and warmest rooms	Over 4 degrees between coolest and warmest rooms
Variation in temperature between floor and 30 inch level	Less than 0.6 degrees for each 10 degree difference between indoor and outdoor temperature	Between 0.6 and 0.9 degrees for each 10 degree difference between indoor and outdoor temperature	Over 0.9 degrees for each 10 degree difference between indoor and outdoor temperature
Variation in temperature between floor and ceiling	Less than 1.0 degree for each 10 degree difference between indoor and outdoor temperature	Between 1.0 and 1.5 degrees for each 10 degree difference between indoor and outdoor temperature	Over 1.5 degrees for each 10 degree difference between indoor and outdoor temperature
Floor surface temperature	Between 65 and 70 F including corners and outside edges during average outdoor weather	Between 60 and 65 F including corners and outside edges during average outdoor weather	Colder than 60 F including corners and outside edges during average outdoor weather

(over)

POINTS TO CONSIDER	GOOD SYSTEM	FAIR SYSTEM	POOR SYSTEM
Drafts	No noticeable drafts in any occupied area	Discomfort from drafts at specific spots in an occupied area	Discomfort throughout occupied area
Ventilation	No stale odor in house	Stale odor in house	Objectionable odors in house, lack of sufficient combustion air
Blower operation	Continuous when outdoor temperature is 58 F or under	Continuous only when outdoor temperature is 38 F or under	Continuous only when outdoor temperature is 18 F or under
Furnace capacity	Reserve capacity of 10% at design conditions	Reserve capacity of less than 10% at design conditions	No reserve capacity at design conditions
Fuel burning efficiency	At least 72%	At least 67%	Less than 67%
Flue gas venting	0.02 inches water gage or greater available draft	Between 0.02 and 0.015 inches water gage available draft	Less than 0.015 inches water gage available draft
Noise	Equipment is quiet	Equipment noise is noticeable	Equipment noise is objectionable

(UNDER CERTAIN CONDITIONS of house construction, air distribution, local climate, etc., many or all of the requirements outlined in these standards can of course be exceeded)



Heating Standards — Great New Selling Tool

To show the tremendous selling power in the proposed standards, American Artisan presents a special section explaining how to use them in telling the “quality — not price” story to prospects, in language they can easily understand



CONTENTS OF THIS SPECIAL SECTION

What Are the Heating Comfort Standards?	38
Standards Tell “Comfort, Not Price” Story	40
How to Prospect the Market for Standards Promotion	41
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What Are the Heating Comfort Standards?

This set of standards, presented in a series of 19 articles in *American Artisan* and developed by Professor S. Konzo of the University of Illinois, can be one of the most effective sales promotion devices the industry has ever used in beating price competition with quality. They are condensed here to help you present the quality story to prospects. These standards are already being used successfully by several heating dealers. The following articles give suggestions for using *Artisan's* condensed standards in all phases of selling and promotion

INDOOR COMFORT for the American home owner has long been held by the warm air heating industry as its principal goal. Pace setters in the industry have always sought to sell comfort and not merely to sell heating equipment, its installation or servicing. Years of research and study have led to the development of equipment and application techniques which can make the goal of indoor comfort a reality.

But what has been the result? The field investigation committee of the National Warm Air Heating and Air Conditioning Association reports that it has found too many homes that are far from being comfortable. The industry for years has been plagued by "price" selling with its necessary companion, reduced quality. Home owners have tolerated such conditions because they seem to be blissfully unaware of the comfort the industry is capable of providing.

Home Owner Must Know Facts

In the words of no less an authority than C. W. Nessell, chairman of the field investigation committee, "When home owners silently accept as inevitable cold floors, frigid air around the ankles, torrid air around the head, and drafty registers which blow cold air down the backs of their necks — then the conclusion is inevitable that something is wrong. It appears we have been

negligent in telling the home owner the facts of comfort heating."

Mr. Nessell further pointed out, "Our industry must radically change its merchandising appeals if its high level reputation is to be maintained and the current surge of cheaply installed, poorly performing jobs is to be stopped. We must sell the taste and aroma of the apple pie, instead of the recipe that the cook used to make it. We must have comfort performance standards that specifically define what indoor comfort means, and they must be written in 'Kitchen English.'"

Artisan Series Is Basis for Campaign

American Artisan long has realized the need for such comfort standards. In February 1955 the Artisan began publishing a series of articles which proposed a set of standards to be used in classifying warm air heating systems according to performance. These articles, which ran 19 months, were prepared by Professor S. Konzo, mechanical engineering department, University of Illinois, who has been closely associated since 1927 with the research program sponsored by the National Warm Air Heating and Air Conditioning Association. Professor Konzo has contributed many articles to the Artisan over 20 years and his extensive knowledge of the warm air heating field has been responsible for many of the ad-

vances made by the industry. Probably no member of the industry is better qualified to initiate such a set of standards.

Since the publication of these standards in the Artisan a move has been underway in the industry for their adoption in some form or other for use in consumer education. In September 1956, at a meeting of the research advisory committee of NWAHACA, Mr. Nessell appeared and recommended the adoption of such standards. At the annual meeting of the association's publicity and merchandising committee at the convention last November, the need for such a set of well defined performance standards was a major point of discussion. As a result, at the present time the association is working on a modified version of the performance standards that can be used by home owners to check their heating systems.

Standards Cover Three Conditions

The Konzo standards, as elaborated in his articles, cover three areas:

- a) house construction
- b) furnace performance
- c) comfort conditions

In regard to the first of these categories, Professor Konzo points out, "The heating dealer has comparatively little influence as far as building construction is concerned. He is required to furnish a heating system for the houses which are made available to him. However, a dealer will frequently be consulted by the builder, the home owner, or the architect about items such as moisture protection, insulation requirements, and others. He will be in a much stronger position if he is able to make suggestions for changes in house construction at the time the plans are being made, instead of later."

In addition, Professor Konzo points out, if a dealer has standards to use in comparing house construction, he will be able to judge which houses will be easiest to heat and will be amply forewarned that a house may be a trouble maker even before the bid has been made.

Standards Rate System Performance

The heating standards proposed by Professor Konzo include six factors relating to furnace performance. These items show how closely the principles of comfort air circulation are being adhered to in a given installation. If the blower operates almost continuously in moderately cold weather, if the rate of fuel input to the furnace is not excessively high, and if the measured flue gas losses are within stated limits, the plant will be in reasonably good adjustment.

The proposed standards concerning comfort conditions refer to temperature control which will make a home comfortable in every corner and from floor to ceiling in every room.

As Professor Konzo states, "The work at our research residences has demonstrated time and again that good equipment and good installation practice alone are not

NEED MORE STANDARDS CARDS? We'll send you ten free; quantity prices are:

Quantity	light stock (for folding and mailing)	heavy stock (for display or handout)
50	\$ 1.00	\$ 1.20
100	2.00	2.40
200	4.00	4.80
300	6.00	7.20
400	8.00	9.60
500	10.00	12.00
1000	20.00	24.00

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enough. The manner in which the burner and blower are adjusted and the controls are set will mean the difference between a poor job and a most acceptable one."

In order to show the merits and deficiencies of the various heating systems, Professor Konzo devised an arbitrary scale of A, B, C, and D ratings. The average warm air heating system giving satisfactory levels of indoor comfort would likely rate a B classification. This is probably the highest rating a well installed and properly adjusted system in an average house would normally get. The A rating would be earned by those relatively rare installations where a combination of excellent house construction, extremely good weatherproofing, and properly sized and finely adjusted heating plant would produce the ultimate in indoor comfort and close temperature control at a minimum operating cost.

A job that is less satisfactory than one with a B rating, yet gives a level of heating comfort that can be tolerated without too much discomfort in all areas of the home, would likely rate a C classification. Installations with a low level of heating comfort that can be tolerated only with considerable discomfort would fall in the D classification.

Standards Are Realistic

Professor Konzo is among the first to admit that the standards as he proposes them may be subject to some change. Mr. Nessell, however, remarked, "While it is admitted that the proposed ratings may be subjected to some modification upon review, they are nevertheless completely factual and realistic as they are."

The purpose of this special Artisan section on the standards is to show dealers how they can use the Konzo standards to sell quality equipment and installations and receive a reasonable price that will provide a fair profit. These standards can become your most important merchandising tool — today!

How To Use the Standards in Selling

Here's support, in the prospect's own language, for your promise to provide what's foremost in his mind — his family's comfort



THE STANDARDS for heating comfort as proposed by Professor Konzo can be an important selling tool for a dealer because they focus attention upon the customer and his desire for comfortable living. They shift the emphasis of a sales presentation away from mechanical equipment and place it squarely on the thing that interests the customer most — his personal comfort and that of his family.

As C. W. Nessel said, "The home owner's primary interest is in the comfort of his wife and kids, and perhaps his mother-in-law, too, and not in cfm or Btu or properly sized ducts. He would not know a Btu if he saw one and probably could not care less about it. A set of simplified comfort standards will give the home owner and his wife something they can understand, something they can use to judge one heating estimate against another."

Emphasis on Quality Defeats Price Objections

In discussing the heating standards recently, Charles R. Bennett, Chicago wholesaler, pointed out that down through the years salesmen have been continually plagued by the customer who complains, "Your price is too high." Mr. Bennett quoted John Ruskin who said, "There is hardly anything in the world that some man cannot make a little worse and sell a little cheaper, and the people who consider price only are this man's lawful prey."

Therefore, Mr. Bennett pointed out, the key to the

problem is to convince people that price is not the only thing that should be considered. "You have to justify your higher price by pointing out what it provides in the way of assured comfort," he said. "On this basis, the cut price dealer simply can't compete."

Campbell Graf, Jr., a Columbus, Ohio, dealer, said the same thing in a little different way. "You have to concentrate your selling upon the very thing that is adding to your price. It costs money to provide assured comfort, to make certain that equipment is properly installed and adjusted, and to stand behind every job. But this is your primary advantage over price cutting competition."

Use Insert Card in Sales Presentation

In order to provide dealers with a convenient means of using the standards to sell quality systems, American Artisan has condensed them into a table form. This table has been printed on a conveniently sized card, which is inserted at the beginning of this special section. This card can be pulled out and carried by a dealer or a salesman when calling on a customer. Or it can be ordered in quantity and used as a direct mail piece.

During his sales presentation, the dealer can cover each of the standards with the aid of the card and show the customer what kind of comfort performance he can expect from various types of systems. The customer then can determine for himself the kind of system he would like to have and what kind of comfort he would like it

to provide. The card can be left with the customer for his reference.

Standards Card Applies to Largest Market

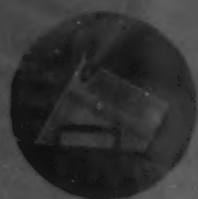
Note that in the condensed version the Konzo standards for house construction have been omitted. This was done because in most cases the dealer has little to say about how the home will actually be built.

The condensed standards omit the Class A system,

since this type of system can be provided only under ideal circumstances and then at substantially higher cost. When the prospect is found who would be a potential customer for a Class A system, the card can still be used to point out why it is superior to all other systems.

For the condensed standards, the three classifications have been termed "Good," "Fair," and "Poor" in order to make their meaning clear to prospects.

The articles that follow explain in detail how a dealer can use the standards to sell step by step.



Prospecting — First Step in Standards Promotion

Now's the time to set the stage for the increased business which can be realized from proper promotion of the heating standards, by gearing your business for stepped-up sales, surveying the market for potential targets, accumulating the material for effective promotion and getting merchandising campaigns and sales presentations off the ground

IT TAKES LITTLE imagination, on looking over these "Kitchen English" heating standards, to see what a tremendous selling job can be done through industry-wide promotion of this new idea. The warm air heating dealer finds himself cast in a role of leadership in an era of comfort-consciousness.

This enviable role entails certain responsibilities for the dealer. In order to reap the full harvest from this powerful program, he must step up his efforts to convince the public that he can supply what is foremost in their minds — their comfort and well-being.

Now he can tell them in language they understand.



BRINGING PROSPECT FILE up to date is a first step in establishing merchandising campaign based on heating standards

Best results from the increased expenditure of time, effort and money can be achieved only through careful planning of the stepped-up selling effort. The heating standards must first be presented to the public before their impact can be absorbed and home owners begin to seek out the heating dealer to handle their comfort problems.

Dealer Must Be Geared to Fast Tempo

Before he sets out to apply his powerful new approach, the dealer must be geared to sell and prepared to deliver

Name _____ Street _____ City _____

Phone _____

New Home
Modernize
Date Sold _____

First Contact Date _____ } Source of Lead _____ Other _____

Furnace _____ Cooling _____

Designed Heating Layout Yes _____ No _____ Quoted Yes _____ No _____ Quotation \$ _____

Terms Quoted: \$ _____ per month for _____ months

Dates to Recall _____

Dates of Sales _____

Products Sold _____

Future Needs _____

PROSPECT CARD contains complete progress report for each prospect. Back of card contains other leads supplied by the individual, plus dates of contact and sale

at the increased tempo he is setting for himself. Inventories must be up, display space available, staff adequate, salesmen trained, rigid pricing schedules set, bookkeeping systems brought up to date and the heating standards explained to the entire staff.

With provision made for handling the increased business volume to be expected from promotion of the heating standards, the dealer begins to consider the best methods of reaching his far-flung market.

Sales Tools Are Available

A wealth of ready-made and tested merchandising ideas and promotion materials are at his fingertips. His wholesaler and manufacturer stand ready to help him with advice and an array of useful sales tools. American Artisan regularly presents case histories of successful promotion campaigns. His local and national associations are on hand with more valuable advice and selling aids. And Operation Home Improvement has proved in dollars and cents that its merchandising programs pay off for participants. Here are some of the prospecting tools available from these sources:

- 1) Shop signs identifying the dealer with the equipment.
- 2) Truck decals.
- 3) Envelope stuffers showing complete lines or special items.
- 4) Condensed copies of the standards to be mailed to old customers, prospects or lists supplied by special agencies.
- 5) Calendars and other giveaway items featuring the dealer's name and heralding his services.
- 6) Servicemen's coveralls identifying their craftsmanship with the dealer and the equipment handled.
- 7) Newspaper ad mats, radio scripts, TV spots, phone book advertising copy and layouts.

8) Service stickers to attach to all equipment installed or serviced.

9) Banners, point-of-sale displays and sales literature to attract visitors to the shop.

Standard Promotion Tools Can Be Slanted

All these tools can be slanted toward the heating standards and will be covered in detail as standards promotions in another article in this section. The whole idea at this point is to familiarize the public with the standards — to make them ask for the type of system classified as "Good" when they are in the market. Signs, stickers, giveaways, etc., for example, can identify the dealer as a subscriber to the ideals set forth in the standards. Newspaper, TV, radio and direct mail advertising can be of two types: 1) promotional, built around a presentation of the standards, together with selling copy and possibly tied in with manufacturer, wholesaler or builder advertising; and 2) small reminders which appear regularly to promote the company name and identify it with heating, cooling and sheet metal work, again tied in briefly but forcefully with the comfort standards.

Cooperative advertising with builders should emphasize and spell out the heating dealer's contribution toward the overall comfort to be expected in a new home. This, incidentally, is a fertile field for heating standards promotion and should be used to the fullest degree. Builders' open houses in model homes should be attended by the dealer's representatives armed with copies of the standards and various types of manufacturers' literature and stationed beside the heating equipment to point out to visitors the advantages of automatically controlled comfort. Builders should be constantly cultivated and educated to sell heating standards.

The Campaign Begins

With his business geared to handle increased sales and with the necessary promotion materials accumulated, the dealer is ready to begin his campaign.

Dealers who install quality equipment have a powerful aid to sales in the form of satisfied customers. Every effort should be extended toward keeping them satisfied. Followup calls and fast response to service requests are the best builders of good will and establish an atmosphere of cooperation between the dealer and his customer so the home owner will be glad to supply names of possible prospects. The satisfied customer will be quick to talk about his installation (especially if he really understands it, in terms of the heating standards) when friends come to call.

How to Use the User

These followup calls are highly important aside from their value in keeping the customer happy. In the relaxed and receptive atmosphere of the satisfied customer's home, the dealer will find the proper opening for a suggestion



NEWSPAPER ADVERTISING, tested method of reaching prospects, tells standards story to vast audience



CANVASSING, whether by phone, door-to-door or both is held by some dealers to be the most effective method of finding prospects

that the customer provide names of a few of his friends who might be interested in new heating systems. (Some dealers believe the customer should be asked for only one or two names at a time to assure his naming really worthwhile prospects.) This is an excellent time to produce a broadside showing gifts which the customer can select as rewards for leads which become sales. These broadsides can be mailed, but it is a good idea for a dealer or sales-minded serviceman to get inside the customer's home periodically for a personal visit and to look over related equipment for a possible sale of add-on cooling, conversion burner, new water heater, etc.

Set Up Prospect File

To realize the full benefits of his followup activities, the dealer will want to tabulate and organize all the information he needs on each customer and prospect so his calls can be presented quickly and without digression from the prospect's interests. A prospect file condenses all the information needed on each prospect to provide a full history of progress toward selling and later, getting additional leads from him. The file system should contain 1) an alphabetical file containing names of all customers; 2) a day-of-the-month section listing calls scheduled each day during the current months; 3) a twelve-month section containing cards for customers for whom calls have been scheduled beyond the 31 day period; 4) cards for "uncontacted prospects" which come up for immediate contact; 5) a "handle immediately" category containing cards for all contacts which should be made today. This card file should be carefully maintained and consulted at least once a day. Each salesman should have his own file.

Civic Activity Pays Off

Participation in church, civic and fraternal affairs pays off in many ways — in prestige, confidence and lasting friendships, in addition to keeping the company name constantly before the public.

Home shows give the dealer and his employees a chance to meet excellent prospects they might not have

been able to contact otherwise. These people are in the market for products for their homes and they are there of their own volition. An attractive display, good location, giveaway items, demonstrations and a comfortable atmosphere will make the exhibit stand out from the others. This exhibit makes an excellent spot for conspicuous display of the new heating standards. Copies of the standards as giveaway items will attract passersby.

Contests attract public interest and provide excellent leads. Here also is a golden opportunity to introduce the heating standards. For example, the entry blank might include a summary of the standards from which the contestant could base a 100 word essay on why he would like to have the type of heating system shown under the "Good" classification. Contests for the oldest furnace, largest family or any other subject that might produce good leads and advertise the company name are proven merchandising tools.

Some dealers have had good results from inviting local women's clubs to hold meetings and attend demonstrations in the dealer's sales rooms. Addressing local groups on the subject of the newly-worded heating standards will help arouse interest. In fact, the standards are close enough to the public interest to be newsworthy in themselves. The dealer's job is largely to see that they get — conspicuously and often — before the public so they will be planted in the home owners' minds and identified with the industry-wide promotion.

Cold Canvassing Provides Personal Contact

Finally, but by no means a last resort in the dealer's prospecting schedule, comes cold canvassing. This is the most personal and — some dealers are convinced — the most effective prospecting technique.

We have already discussed ways for dealers to cultivate builders to capture a share of the new home market. Let's direct our cold canvassing toward the rich modernization market, an equally ripe field for presenting the heating standards. People who have lived with an obsolete heating system for several years will be highly receptive to a down-to-earth discussion of uniform temperatures, dependable response to weather changes and the

other advantages of a new warm air heating system as described in the comfort standards.

Because it involves personal contact with the prospect, cold canvassing is confined to a more restricted market. Obviously, a house call will have to be based on some reasonable belief that the home owner might be a candidate for a new heating system. A survey of the market quickly identifies the most likely prospects. The logical place to start is in an older, well kept neighborhood where the original heating systems are likely to be approaching obsolescence.

Appraise Prospect First

If the canvassing is to be truly cold, without the benefit of prospect cards, the dealer or his salesman should have a check list of points to be brought out in his initial visit with the housewife through observation of the home and through skillful steering of the conversation. Here are a few stock points which will help guide the sales presentation:

- 1) Size, condition and location of rooms.
- 2) Type of present heating system.
- 3) Number of people in the family and their ages.

4) General health conditions of the family (any asthma or hay fever, etc.?)

5) General income bracket of the family.

6) Business and social affiliations.

7) Credit status (probably requires an outside check.)

8) Outside interests of family (as a guide to conversation topics and as a source of information about their habits, amount of entertaining and number of contacts who might become prospects).

Friendly Visit Sets Stage for Presentation

Dealers who employ cold canvassing successfully generally agree that with a skillful approach, which comes with experience, the salesman can meet more people and find out more about their needs in less time and at less cost through this practice than by any other method. This pre-approach or final stage of prospecting is nothing more than a friendly visit with the home owner, housewife or businessman while the salesman projects his professional personality to the point where the prospect is relaxed and supplying the information — through conversation — that the salesman needs to build his sales presentation.



'Kitchen English' Standards Put Sales Story Across

Injecting the recognized power of the heating standards into a well-planned presentation produces a message that will capture and maintain the interest required to convert the prospect into a customer



CONSTANT REFERENCE to standards card backs up dealer's presentation, maintains interest

THE SCENE is the prospect's living room. The housewife and the warm air heating salesman are having a quiet chat, and there is an air of relaxation about the room. The salesman has converted the housewife from a complete stranger who made no attempt to hide her suspicion of the "trespasser" with the briefcase who knocked on her door a few minutes ago, greeted her, introduced himself and said, "I've just been talking to your neighbor, Mrs. Jones, about some new standards of warm air heating which are spelled out to show you what you should expect from your heating system. She was quite interested, and thought you would be too."

This air of relaxation is no accident.



QUIET CHAT with housewife supplies salesman with information to build presentation



INSPECTION OF old customer's installation shows prospect advantages of quality job



COMPARISON of actual installation with requirements on standards card will impress prospects

The salesman has been unobtrusively projecting his sales personality across to his prospect ever since he walked in the door, carefully avoiding any hard selling, other than identifying the purpose of his visit. At this point she is doing the talking and he is taking mental notes which will guide him in his sales approach. He is moving from the prospecting stage into his actual presentation.

Standards Add Power to Presentation

And he is in no hurry. He has self-confidence. He is relaxed and natural. He knows he is going to turn in a good performance, because he really has something to sell. Tucked away in his briefcase is a condensed version of the "Kitchen English" warm air heating standards (inserted at the beginning of this section) which is going

to help him over his biggest hurdle — capturing the prospect's interest.

This scene will be reproduced in thousands of homes all over the country. The stars are the warm air heating dealers and their salesmen who recognize the impact of the warm air heating standards as an industry promotion. They are convinced that the volume of increased business they can realize by selling these standards is limited only by their own abilities to deliver what they can sell, and by the quality and quantity of their sales presentations.

Having laid out their promotion programs based on these standards, and having organized their prospecting programs to the point of the physical presentation of the standards in the prospects' homes, these dealers are brushing up on their techniques of putting across their sales messages and their approaches.

Five-Step Presentation Leads to Successful Closing

Let's review a few of the tried and true ideas which add up to a professional selling presentation.

There are five basic steps in the sales presentation which must be taken in order and covered thoroughly to close the sale. A review of each step follows:

1) Obtain Favorable Attention

A professional salesman develops an instinct which tells him whether or not he has gained favorable attention with his opening remarks. If he senses he has not, he must try another approach to kindle the prospect's interest. When he is convinced he has obtained confidence in himself, his product and his company, he moves into the second phase.

2) Develop the Prospect's Interest

Once he has gained his prospect's attention (dramatic presentation of the condensed version of the heating

standards in this issue should arouse interest quickly) the salesman must maintain and increase this interest by applying sales tools such as a dealer scrapbook containing before-and-after pictures and testimonial letters, manufacturers' literature and portfolios, demonstrations and visualizations. This is the point — probably the most crucial in the entire sales presentation — where the uppermost question in the prospect's mind, "What's in it for me?" must be answered, in terms that will not only hold but also stimulate his interest. This is the outstanding function of the heating standards — to tell the home owner in plain, nontechnical language precisely what effect a new heating system will have on his family's way of life.

Instead of telling him his furnace has a double inlet centrifugal blower with forward tipped blades, capable of moving a maximum volume of air at minimum speeds, the standards-conditioned salesman will say, "In the type of heating system that performs according to those standards shown under the classification of 'Good' which

12 BASIC RULES FOR POSITIVE SELLING IN THE PROSPECT'S LIVING ROOM

1. **DON'T ASK PERSONAL QUESTIONS.** Be friendly but don't go overboard in your relationship with the prospect. Keep the subject on the business at hand and don't get bogged down with unrelated details.
2. **DON'T DISCUSS YOUR PERSONAL PROBLEMS.** You might want to point out the satisfaction you have realized from your own heating and cooling system, but stay away from political, religious and other personal subjects.
3. **WATCH YOUR MANNERISMS.** Don't get carried away to the point that your gestures and movements might distract the prospect from the point of your presentation.
4. **BE ENTHUSIASTIC.** A dynamic and forceful presentation is contagious. The more sold you are on your product the easier it will be to sell your prospect on it.
5. **BE A GOOD LISTENER.** Let your prospect do some of the talking. Don't interrupt, and analyze his conversation to feel out his objections and other points you will want to clear up for him.
6. **BE COURTEOUS.** Maintain your dignity at all times. An occasional sincere smile helps instill confidence. But don't overdo it.
7. **GET DOWN TO BUSINESS.** Respect your prospect's time by getting right to the point and leaving as soon as your mission is accomplished.
8. **BE A GOOD COUNSELOR.** Study his problems and be sure he understands their solutions. Try to analyze his viewpoints and personal tastes.
9. **DON'T GUESS THE ANSWERS.** If you're not sure, say "I'm sorry I don't know the answer but if I may use your phone to call our engineers, I can let you know immediately." It shows you're genuinely interested.
10. **DON'T BLUFF.** You're bargaining for serious troubles by bulldozing your way into sales by making promises you can't keep. Even a minor infringement of this rule can lose the sale.
11. **AGREE TO CONFIRM FIGURES IN WRITING.** Complete the order in black and white. Have the customer's approval indicated by his signature. Misunderstandings on both sides are eliminated this way.
12. **THANK HIM FOR HIS ORDER.** This is no time for a letdown. Leave him with the assurance that you will personally see to it he is satisfied with his installation.

I recommend for your home, the blower in your furnace will operate continuously when the outdoor temperature is 58 F or under. And you won't notice it except in improved circulation of comfortably warm air, because the blower in this class system will operate more quietly, with less vibration, and will last longer than any other type of blower." The salesman is talking about the prospect's comfort, not describing a piece of complicated machinery. And so it goes, through the point-by-point explanation of the heating standards. The prospect's interest mounts as he pictures himself more and more clearly relaxing in clean, comfortable, draft-free air in all rooms and at all levels of each room. When the salesman judges that the prospect's interest is approaching the point of desire for the product, he moves into the third step of the presentation.

3) Stimulate the Prospect's Desire

The prospect's reaction must be stimulated from passive interest to enthusiastic acceptance of the product and

its benefits. Nothing builds enthusiastic acceptance faster than enthusiastic presentation. The professional salesman's confidence and natural pride in his product and in the heating standards are contagious if they are backed by a factual and orderly sales story. Many dealers believe each salesman must have a canned sales presentation — in the conviction that a sales story can't be told with any emotion unless it is a memorized story. These dealers would certainly memorize their standards presentations and practice their deliveries to capitalize on the natural emotional appeal of these down-to-earth standards. Constant reference to a published set of heating standards such as the one inserted at the beginning of this section adds authority to the presentation and keeps the salesman's remarks from straying off the point. In the meantime, the professional salesman is methodically anticipating and overcoming the prospect's objections or apprehensions about the sale, before he has a chance to bring them into the discussion and make an issue of each one.

Chances are, the presentation has been interrupted at

some point if it has been given only to the housewife or only to her husband, and is to be continued when both parties are present. At any rate, even after the prospect's desire has been converted into what he or she considers a definite need for the product, certain objections the salesman couldn't foresee will come up — especially if the husband and wife have gotten together in the salesman's absence to discuss this new "need." And the salesman finds himself entering the fourth phase of the presentation.

4) Overcome Buying Objections

These unforeseen objections can take any number of forms. Chances are, they are not really objections but misunderstandings which can be cleared up with a few words of explanation. If they are genuine objections, the salesman who knows his product and is convinced of its quality will be able to eradicate any doubts with a more detailed discussion of each point than he offered in the initial presentation. Price, of course, will often be the strongest objection or apprehension. Assuming the salesman has thoroughly covered the quality aspect of the systems described in the heating standards, he still has an excellent tool for overcoming objections based on financial limitations. Having already established the cut-price system in the prospect's mind as capable of providing only "Poor" conditions (as described in the standards), he has a basis for comparison — not in terms of total cost of the "Good" system against the undesirable systems but in terms of the few pennies a day extra which insure permanent and automatic heating comfort. More will be said on the subject of price in another article in this section, on closing the sale. Having dispelled, one by one, the prospect's buying objections, the salesman looks for the signal that he has reached the final step in the presentation.

5) Obtain Favorable Reaction

Doubt has not been dispelled unless it is replaced by a positive impression. It is the salesman's final responsibility, before asking for the order, to make sure every single doubt has been erased and in its place a favorable impression has been established. This signal may come in the form of a surreptitious nod between husband and wife, a statement of satisfaction by either party, or a request to "think it over." Or, on the other hand, the signal may be characterized by a lapse in conversation, or a statement by the prospect that continues to reflect indecision or a negative attitude. In this case, the salesman must review his approach to see if he can recall any point which should have been covered further, and again try to anticipate what doubts still remain to be overcome.

When, at last, the impression seems generally favorable, or the positive points outweigh the doubts strongly enough to be offset by the reasoning of the prospects themselves, the salesman can confidently ask for the order.

Comfort Standards Close the Sale



**... as buying objections
are cut down one by one with
the inherent logic of the
itemized heating standards**



PAYOFF COMES with signing of contract. Charles R. Bennett, who assisted in preparation of this special section, closes sale by offering housewife contract first—she'll be living with the system

"YOUR PRICE is too high."

In the preceding discussion of methods for presenting the sales story, we watched the salesman systematically cut down the prospects' buying objections one by one until he felt their overall attitude was in favor of buying the heating system he proposed. Realizing the best way to determine whether all objections have been dispelled is to ask for the order, the salesman does so, diplomatically, so as not to close the door on further discussion if the answer is negative.

He is fortunate to receive a reason for the prospect's reluctance. Otherwise, he would have to review his sales presentation to determine where he failed to anticipate or overcome a hidden objection. If the answer is as ex-

12 Obstacles to Closing The Sale

1 "I can't afford it."

The customer must be convinced he'll save money in the long run with a system installed according to the comfort standards.

2 "I have to consult my husband."

The salesman should arrange a meeting and present his story to both husband and wife.

3 "I'll buy next week."

The salesman points out that the promised benefits and savings in cost begin at once when a heating-cooling system is installed immediately.

4 "I never buy on installment basis."

This objection is often a stall and can be overcome by special arrangements to pay cash on a 30, 60 or 90 day basis without interest charges.

5 "My old furnace is adequate."

Comparison of features of the proposed installation with those of the old unit and with the condensed table of heating standards leaves little doubt as to the advisability of replacement.

6 "The price is too high."

The salesman emphasizes the importance of quality equipment, and explains what the prospect will get for his money in terms of the heating standards.

7 "I've never heard of your company."

The salesman points out the reputation of the manufacturer and his products and presents testimonials from satisfied customers.

8 "I'm interested in another brand."

The salesman agrees that the competitive line is good, then proceeds to point out the advantages of his company's equipment.

9 "The type of fuel used is dangerous."

The salesman emphasizes the high standards observed by his firm's engineers and points to the safety requirements of the various associations and testing agencies.

10 "Warm air heating is dirty."

A description of the filtering processes used in modern systems will dispel this objection.

11 "The fuel is too expensive."

Actual operating costs are cited and the most inexpensive fuel is recommended.

12 "I feel cool in a warm air heated home."

The functions and reliability of modern controls should be emphasized and the advantages of continuous changing of air cited. All these points can be cleared up by constant reference to the comfort standards.

plicit as "Your price is too high," or one of the other common obstacles to closing which are listed separately on this page, the salesman has only to eliminate a single point which has been defined for him by the prospect.

Before considering ways to overcome price objections, we should review briefly some successful methods of dispelling objections in general.

Two Types of Objections

There are broadly two types of objections: 1) those based on the prospect's point of view; and 2) those founded in prejudices and opinions.

The first category is comprised of objections which can be overcome by correcting certain impressions based on mistaken ideas and lack of knowledge of the subject. These are viewpoints and are easily overcome by logic. The prejudices and opinions, on the other hand, are formed after a certain amount of thought and represent actual predetermined ideas. They require special handling, with each point proved diplomatically, showing respect for the prospect's point of view but again undermining it with logic. Most prospects will recognize the logic of the salesman's "argument" and will in turn respect his views, at the same time beginning to question their own.

Three Methods Overcome Buying Objections

Here are three methods salesmen have used successfully to overcome prospects' objections:

1) Ask why. Find out the reasons for the objection, then proceed to overcome it with logic.

2) Discuss the objection thoroughly. Dispel it by giving helpful information and counsel. Don't argue, but give the prospect complete and fair answers to all his questions.

3) Use the "Yes, but . . ." technique. Maintain obvious respect for the prospect's viewpoints, opinions and prejudices but help him reach more logical conclusions. Following are four variations for introduction to this technique:

a) "I can well appreciate your viewpoint . . ."

b) "I understand your position . . ."

c) "Yours is a perfectly natural (or logical) conclusion . . ."

d) "You will probably be interested in Mrs. Jones' viewpoint . . ."

Sometimes the prospect's objections are general — he has nothing against the product, the salesman or his company. He just doesn't feel he needs or wants a new heating system. Here again, presentation of the standards and point-by-point explanation will underline the differences between his present system and one which would be installed according to the ideals set forth in the heating standards.

By this time, the salesman has completed his sales presentation. He has gone over the heating standards in detail and he has drawn up a rough layout of the system



PROSPECT BECOMES CUSTOMER when final buying objection is overcome and homeowner's signature is on dotted line

he proposes. He has overcome each buying objection in turn, referring constantly to his condensed heating standards, stressing again and again the importance of quality. He has sized up the prospect until he knows him like his own brother, and he suspects that this family is inclined to buy on price, because he sees evidence of it in the home. Accordingly, he has stressed the "few pennies a day for quality" angle. But he knows he still has that one objection to overcome, and he's not worried because he now has the tool to define quality and make it look better than price. He has explained in terms of the heating standards the only type of system he proposes, the one that can meet the specifications listed under the "Good" classification, but he hasn't compared it to the price-cutter's system. So he once again asks for the order, and he smiles when the prospect makes the reply, word for word, which the salesman expects:

"Your price is too high."

Standards Beat Price Competition

He knows he can get a warm air heating system from Mr. Low Bidder, a dealer down the street, for \$300 less than the salesman's estimate. The prospect admits that the salesman has proposed a better system, and he appreciates the education he has gotten from the salesman, but \$300 is \$300 and he can take a slight draft on the back of his neck for \$300.

Our salesman is in complete sympathy with him. "You want me to trim \$300 from my price?" he says. "All right, let's see how we can cut corners by giving you the kind of system you'll get for \$300 less than I suggest."

"All we have to do is cut out two supply duct runs and one return air duct, size the duct work for heating without provision for add-on cooling later, use a smaller blower and a lower quality furnace, and eliminate the time required to adjust the system for continuous air circulation. Also, we will discard our free service policy

and use the cheapest type of grille for supply air discharge.

Prove Each Compromise Is a Sacrifice

"This is the physical saving we can effect in terms of dollars and cents. In terms of comfort, as you can see in this breakdown of the warm air heating standards, we have eliminated the possibility of controlling temperatures in different parts of the house to suit the requirements of the different areas. The amount of clean, warm air supplied to rooms distant from the furnace will be reduced if the supply runs are eliminated; we will create cold drafts; the possibility of adding summer air conditioning without expensive modification of the duct system and blower is eliminated with the 'Poor' system; we will be taxing the capacity of the furnace and its components to provide comfort when the weather is the coldest; and we will not provide the benefit of continuous blower operation that keeps the warm air flowing to all areas of your home.

"In recommending the type of system that will meet the specifications shown under the 'Good' classification,

REMEMBER . . .

These standards, which are the results of considerable research and discussion over a period of many years, are as accurate as possible, but as is the case with all elements of a progressing industry, are subject to further research and field investigation. In the meantime, the standards remain the most realistic criteria for indoor comfort now available.



DELIVERY DATE is suggested by salesman as alternative to direct request for the order



NEW CUSTOMERS are convinced their installation will provide utmost comfort

we are able to assure warm floors for the children to play on and avoid too-warm temperatures near the ceiling (a condition which causes respiratory diseases and allergies). Above all, if the lowest price system were installed, you would not be saving a single penny over the long run. After a few seasons you'll find you've spent more on higher operating costs than you saved on your initial investment."

Resistance Wilts Under Factual Presentation

The salesman is at full steam now — his enthusiasm and confidence are growing by leaps and bounds as he props up his printed standards and points out each costly difference between the "Good" system and the "Fair" and "Poor" systems. He sees his prospect's resistance wilting, but he's not through until he has covered all the points in the standards plus a few of his own.

He points out the importance of adequate ventilation, which, in the "Good" system, eliminates stale odor and helps provide a minimum of 72 percent combustion efficiency, compared to the unacceptable system which does nothing to remove objectionable odor and contributes to the poor showing of less than 67 percent for combustion efficiency. He points to the advantage of quiet operation as compared to objectionable noise produced by the lowest priced system, and he stresses the importance of maintaining even, comfortable temperatures from the floor to the 30 in., or sitting, level.

Prospects Follow Standards 'Score Card'

He may have his prospects sold by now, but he still has more to say. For the first time, he has a tool which adds power to his words — a score card which his prospects can follow to see the difference between what he has to sell and what the price-cutter offers for \$300 less.

He talks about air purification; lower fuel bills; flue gas venting adjustments to keep combustion products out

of the living area; quiet operation; and he reminds the home owner of the safety factors and controls included in the "Good" system which must be sacrificed in the cheap system. What's more, he concludes, it wouldn't be practical to offer a service guarantee on anything other than the "Good" system, while the firm's service department would be on call for free adjustments and service for the period specified in the contract given to purchasers of systems classified under the "Good" column.

(The salesman is careful to point out that all of these services cannot be provided under any system that fails to qualify under the "Good" classification.)

By this time, the husband and wife are nodding in agreement with each point the salesman makes. But he has to dispel the final shadow of the price objection. So he caps his closing presentation off with:

'Good System Is Only Way to Cut Costs'

"So you can see that cutting corners does not save money but increases the cost over the long run. But I can show you how you can relieve the cost burden even further than by trimming the price. I can provide you with the benefits of the 'Good' heating system for fifteen cents a day (or whatever the figure amounts to under the financing method used). You can make a direct bank or finance company loan, you can get FHA financing, you can refinance your mortgage to include modernization, or you can tack this onto your present mortgage if you have the open end type. We will be glad to handle the credit procedure for you."

Then he sits back. "Don't you agree that it's the 'Good' system, paid for under a financing plan, that you want installed?"

"Yes," both parties agree. "You are right."

"All right, would you prefer delivery Monday or Tuesday?"

"Monday will be fine. Where do I sign?"



How to Start Your Promotion Program

... based on the heating comfort standards and geared to your individual needs. American Artisan presents some starting points for a well-balanced merchandising campaign

TO INCREASE the effectiveness of the heating standards as a sales tool, they should be merchandised energetically through a varied program of sales promotion. Naturally there can be no single promotion program that will work for every dealer. A promotion program must be tailored to fit each individual dealer's business and the community in which he sells.

Of course, much more can be done in merchandising these standards, not only by the dealer but also by manufacturers, wholesalers and the local and national associations. American Artisan will continue to promote the campaign and present new ideas for using the standards for building sales volume.

As the program progresses, new ideas for promoting the standards will be born, new tools to help the dealer will be prepared and distributed, and the campaign will take on increased power. For example, once a selling slogan has been established, dealers will be able — in a few words which can be quickly absorbed — to tie in their signs, letterheads, equipment stickers and other promotion media with their more detailed presentations in newspaper and other forms of consumer advertising.

Listed below are a few ideas indicating ways in which the standards can be promoted. The list is not intended to outline a complete merchandising campaign nor does it pretend to include the best ideas that can be used. Its purpose is to provide a starting point to aid dealers in developing their own ideas.

1) Newspaper Advertising

a) Run a series of ads, each ad explaining one of the standards. Each ad should explain that there are 12 of these standards in all and should include an offer to send the reader a free copy of the condensed, "Kitchen English" heating standards.

b) Run a single large ad briefly explaining what the standards are, why they are important, and how to get more information about them. Use the same ad in a regular insertion schedule.



THE ADVERTISING manager of the local newspaper can help a dealer develop a series of ads that will put across the standards story

c) Run a series of cooperative ads with other dealers featuring a presentation of the standards and listing the cooperating dealers who offer heating systems based on them. This could be handled in a manner similar to the publicized Milwaukee WHAM program. These ads could be followed up profitably with smaller ads by individual dealers identifying their firms with the standards.

2) Direct Mail Campaigns

For a direct mail campaign, send out reprints of newspaper ads, letters, and copies of the condensed standards.

Some important things to watch in using direct mail include:

a) Cover only one subject in each letter. Don't try to combine a discussion of the standards with a sales approach on cooling, service contracts, or other subjects.

b) Emphasize the benefits the customer will receive if the highest standards are adhered to in his heating system.



A COPY of the standards can be sent with a covering letter, as a direct mail piece



A DEALER should identify himself with the standards by mentioning them in his phone book ad and elsewhere



AT OPEN HOUSE, visitors can be shown how heating system adheres to heating standards

c) Offer proof of these benefits by using customer testimonials.

d) Encourage the prospect to take some action, to write or call for a copy of the standards (if it has not already been mailed to him) and information on how the standards can be applied to his own home.

The mailing list can be built from:

- 1) your list of past customers
- 2) municipal and county records
- 3) city directories and telephone books
- 4) credit books and club rosters
- 5) general mailings to every home
- 6) mailing list agencies
- 7) lists of new families from utilities

3) Radio and Television

a) Brief spot announcements can emphasize one standard at a time, and offer to send a copy of the standards.

b) Longer spot announcements can go further in telling what the heating standards are and offering further information by mail or phone.



THE STANDARDS CARD can be mounted and displayed in the dealer's window or on the wall or a sales counter where it can be easily seen

c) On a sponsored program, brief skits could be developed showing how each of the standards affects comfort in the home.

4) Showroom Displays

a) Display reprints of ads in a window or on a counter.

b) Mount a copy of Artisan's standards card and display it in a window or on the counter.

5) Phone Book and Other Promotion Devices

Identify yourself with the standards by a statement on the order of "We specialize in heating systems that adhere to the 'correct standards for heating comfort.'"

Such a statement could be used in:

- a) phone book display ads
- b) truck signs
- c) job signs
- d) billboards
- e) calendars
- f) stickers for affixing to equipment
- g) matchbooks and other giveaway items

6) Home Shows and Open Houses

Home shows and open houses offer good opportunities to tell the standards story. All the above techniques can be combined in this type of event to make an effective presentation.

7) American Artisan's Standards Sales Card

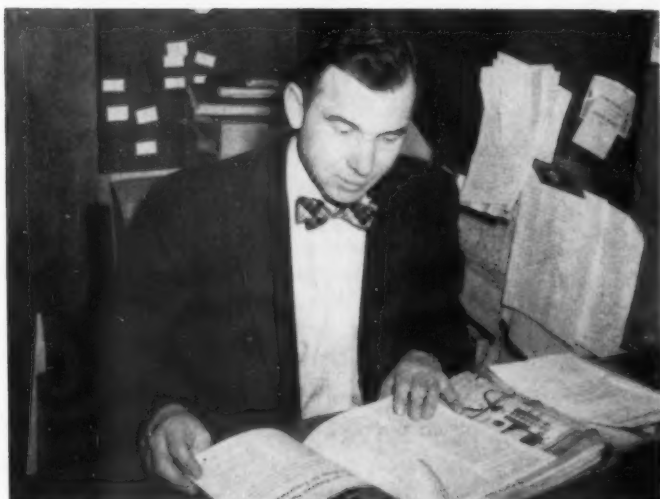
Copies of Artisan's condensation of the standards inserted in this issue can be used in many ways: a) as a direct mail piece, b) as a handout, c) as a display card, or d) in answer to inquiries for additional information. See box on page 39 in this section for information on how you can get reprints of this card in quantity.

SELLING WITH THE STANDARDS

The special section on the preceding pages outlines in detail a sales promotion and merchandising program based upon the correct heating comfort standards which have been featured in American Artisan.

In order to get the dealer's outlook on

how these standards may be used in selling, the Artisan interviewed two dealers who had previously expressed great interest in the standards story. In the two articles that follow, these dealers tell how they plan to use the standards and why they expect them to be of great value.



ARTICLES IN the Artisan on the heating standards are reviewed by Campbell Graf, Jr., for sales ideas

Here's How One Dealer Plans To Sell with the Standards

This dealer feels the correct heating standards are the answer to price cutting competition because they shift the sales emphasis to comfort performance

"If a DEALER would use the correct heating standards as a sales tool," said Campbell Graf, Jr., general manager, Graf Company, Columbus, Ohio, dealer, "he would force price cutting competition to match his quality. The customer would know the right questions to ask to find out why a second estimate was considerably lower. And the customer would become more aware of the fact that he generally gets only what he pays for."

This was his response when asked to comment on the value of the heating standards in selling. Then he added, "You have to concentrate your selling efforts on the very thing that is adding to your price. It costs money to provide assured comfort, to make certain that equipment is properly installed and adjusted, and to stand



LAYOUT OF a heating system designed to meet top standards of comfort is discussed by the Grafts, father and son

behind every job. But this is your primary advantage over price cutters."

Shift Emphasis From Equipment

When making a sales presentation, Mr. Graf feels it is important to shift the emphasis away from the equipment itself and to place it squarely on the application of the equipment in providing comfort. "You have to think in terms of solving a customer's problems, of making him comfortable, rather than just selling a heating system," he said. "And the standards can help you do just that."

Mr. Graf believes the best approach to introducing a customer to the standards would be to start with a discussion of what the human body requires to be comfortable. The dealer or salesman could explain the relationship between temperature, humidity and air movement as they affect personal comfort. Then he could explain how the standards have been designed to provide for the control of these factors in order to assure comfort conditions within the home.

Stress Particular Standards

Describing how he would use the standards in a sales presentation, Mr. Graf said that he would examine each of the standards with the customer, giving a fuller explanation of what each means in bringing added comfort in the home. He pointed out that certain of the standards should be given greater emphasis with particular prospects.

For example, Mr. Graf said that an elderly couple might be more anxious than others to have their home free of drafts. A couple with young children might be especially interested in seeing that their floors are warm. Some people are bothered by equipment noise more than others, and therefore they would be more interested in features which would reduce this noise.

Mr. Graf said he has been considering printing an

outline of the comfort standards on the back of his sales agreement. When shown a copy of the Artisan's rating card (inserted in this issue), he said he felt that this would be better suited for the purpose.

Considers Quick Estimates

In order to give the customer an idea of costs, Mr. Graf has been considering some means of making a quick estimate on the first sales call. With such a method a salesman could quote figures for a 'Good' system, a 'Fair' system and even a 'Poor' system. Thus the prospect would be able to see approximately what additional cost is involved in providing for assured comfort.

Of course, when giving the customer a quick quote the salesman would need to emphasize that it is impossible for such an estimate to be accurate because there is no short cut way to design and estimate a heating system which will meet the comfort standards, Mr. Graf points out.

Although Mr. Graf feels that similar standards for cooling would be useful, he indicated that cooling sales do not present the same problem. "Customers seem to be willing to take a chance on just about any kind of heating system," he said, "but they're more careful when it comes to buying cooling." However, he stated that many people need to learn that summer air conditioning in their home does not have to mean the kind of cold, clammy feeling they have experienced in many stores, theaters and other public buildings.

Service Builds Sales

Mr. Graf is a firm believer in good service as a means of building customer satisfaction and sales. His company's promotion emphasizes its 24-hour service. In order to spread out the load of service calls, the company has been promoting service on a contract basis. The firm's service policy provides for two furnace check-ups a year. Emergency calls are billed separately. The service policies enable the company to schedule these check-ups at convenient times, and through preventive maintenance they reduce the number of emergency calls and irritated customers.

Since Mr. Graf is a college-trained engineer, he stresses engineering on each job. He keeps himself and his staff well informed on the latest technical developments in the field. A layout drawn to scale is an essential part of each estimate. With this layout the customer can see exactly what is proposed. The salesman can use the layout to show the customer how its various features are designed to make the system perform in accordance with the correct standards.

In summing up his view of the heating standards, Mr. Graf said he felt they could go a long way towards upgrading the industry if they are put to use. He looked forward to the day when architects would write specifications according to such standards rather than in the imprecise terms used at present.



SALES presentation is reviewed by Joseph Stark to find ways to use the heating comfort standards

**SELLING WITH
THE STANDARDS**

Public Must Be Shown The Way to Judge Quality

**. . . this dealer declares. He views the Artisan's
correct heating standards as a great step forward.
He cites his experience to prove quality can be sold**

"I AM CONTINUALLY shocked to find so many beautiful homes which are not comfortable because they are burdened with poor heating installations," says Joseph C. Stark, Stark Heating Co., Beaver Falls, Pa. "And what disturbs me even more is the fact that many of these poor installations have been sold at the price of a quality system."

"The general public must be given some way to judge for itself whether a heating system is a good one or a poor one," he continued. "I personally feel that Artisan's heating comfort standards are a great step forward in educating the public on what to demand when buying a heating system."

Mr. Stark expressed this opinion to dealers at the convention of the Pennsylvania Sheet Metal, Air Conditioning and Roofing Contractors' Association last April. He appeared before this convention and read an editorial in the April issue of the Artisan which urged dealers to make use of these standards.

"I have had proof in my own business that quality can be sold, if you can get the comfort story across," he said when interviewed. "For example, over a ten year

period I have had excellent results selling electrostatic air filters. People will not buy extra equipment like this if their sole concern is price," he said.

Mr. Stark feels that the public has a desire for quality heating, and that the dealer must bring this desire out into the open. In order to do that, he says, you have to give the customer some basis for determining what quality is. The emphasis must be placed upon comfort and what must be done to attain it. The Artisan's heating comfort standards are a useful tool to accomplish this objective, he adds.

Best Ad Is Satisfied Customer

As is true of all dealers who insist on making only quality heating and cooling installations, Mr. Stark has found his satisfied customers to be his best advertisement. As a result his company has done a large amount of repeat business for past customers, their friends and relatives. In one case he has installed seven heating jobs for one couple and their immediate family.

**Build a good reputation and
open the door to sales by
making good use of. . .**

Courtesy: An Important Aid to Sales

WHEN YOU ENTER a store to make a purchase, you usually expect to be treated courteously. But everyone has had the opposite kind of experience. A sales person has ignored you or spoken sarcastically. Your reaction most often is "Look here, I can very easily take my business elsewhere."

Look at the other side of the coin for a moment. How does the front office courtesy in your business stack up? How many people walk out of your door and head for your competitor's just because they have been treated discourteously?

A typical heating-cooling dealer is caught up in a swirl of important decisions and small details. At times he feels that he has little time left for being tactful. And customers can be irritating. Courtesy takes a little trouble and time, but it pays off handsomely. Courtesy can be your hidden salesman.

Courtesy Like Oil in Machine

Courtesy in your business is something like oil in a machine. It makes things run smoothly and, as it were, with less heat. In a company with a relaxed, pleasant atmosphere there are fewer irritations, fewer strains, fewer trampled feelings than in a rude and surly outfit. Courtesy extended to others will return tenfold.

Over the long run, courtesy and consideration will build a good reputation in the minds of all — from customers and employees to suppliers, competitors, civic organizations, charities and the press. Courtesy is a way for a dealer to get that extra sale which is lost by the fellow who does little if anything but keep his eye on the cash register. It is a way to help your sales and profits grow.

Here are some of the ways courtesy helps:

CUSTOMERS—Courtesy makes a customer want to return and reduces his interest in shopping around. A customer enjoys doing business with a courteous company. It gives you an important competitive advantage.

NONCUSTOMERS—Many people enter your place of business with no intention of making a purchase. You can try to get rid of them as quickly as possible or you can take the time to treat them courteously. Suppose a stranger calls to ask for an item or service you can't supply. Suppose someone calls your number by mistake. Suppose someone comes in to ask directions. If you treat

these people courteously, they'll feel welcome and the next time they may come back to buy.

Builds Employee Loyalty

EMPLOYEES—What is more important to you than an able and loyal employee? When you are considerate and courteous to your employees, each person feels he is recognized as an individual and that he is valued as an important part of the firm. With this feeling, you can find the motivation for that extra effort which makes for alert teamwork. Good employees are less likely to look for another place to work. The paycheck doesn't become the only standard for judging the job. The work seems a lot more fun.

SUPPLIERS—Without the help and cooperation of suppliers, your job of running a business would be a lot tougher. A supplier can help you out in an emergency. Most of them will be glad to try to give you a break if they feel they can count on the same treatment from you.

SALESMEN—The sales representatives of the firms you do business with can sometimes pass on valuable tips. When a salesman has a good buy, he takes it to the firm that had sense enough to treat him like a human being.

THE COMMUNITY—Your business, to a substantial degree, depends for its success upon its "personality." An attractive personality is best expressed by friendly actions in dealing with neighbors and fellow townsmen. That's why courteous cooperation with civic and service organizations can pay big dividends. These organizations make the community a better place in which to live. That is a worthwhile asset to any company.

Common courtesy is as old as the ages. It is second nature to many successful, long established managements. Maybe that is one of the primary reasons why their businesses have grown and flourished. But courtesy has to start at the top. It is difficult for a salesman to be pleasant to customers if the boss never sets a good example, and discourtesy at the top seeps down to every level below.

Many dealers these days are trying to find new ways to cut costs and improve profits. These are the tangible aspects of business. But the intangibles deserve attention too. They also influence volume and profits. And often they cost little or nothing to improve.

[Note: This article was developed from a report issued by the Small Business Administration, Washington, D. C.]

HUGH REID'S SHEET METAL PATTERN

How to Make an

Oval to Round Double Offset Hopper

. . . with correct angle to assure desired
flow of materials. Here's how to lay out the pattern
via the simplified method

THE DOUBLE HOPPER shown in Fig. 1 was installed above double sand loading conveyors in a production foundry. For this type operation the flow of sand must be controlled or shut off completely. The practical method of regulating the flow would be sliding gate dampers which could be locked in any required position to control the quantity of sand necessary at any given time. The hopper angle is an important design factor. If the angle is less than 45 deg the flow of sand will be retarded and packing will result. The gage of the metal used would depend on the hopper capacity (most sand hoppers are made of one quarter in. metal plate with all welded construction). Hoppers for small parts production of aluminum and other light alloys range from 16 ga to 10 ga metal.

In the construction of most hoppers, an angle frame reinforcement is tack welded around the top edge. In extra large units reinforced angles will be required on the flat side sections.

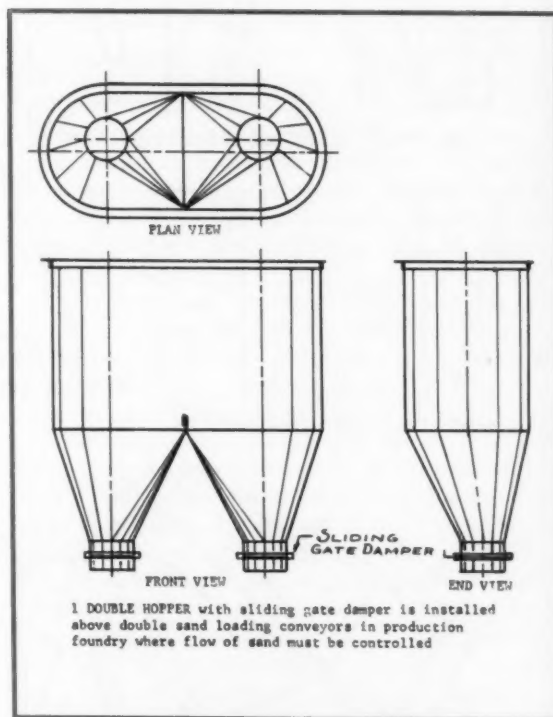
Given the plan view and the front view of a double offset hopper, the following is a step-by-step analysis of the pattern problem solution.

Note: The fitting is symmetrical about the vertical center line; therefore, all the true length lines can be developed from one half plan view.

The Short Method Drawing, Fig. 3 —

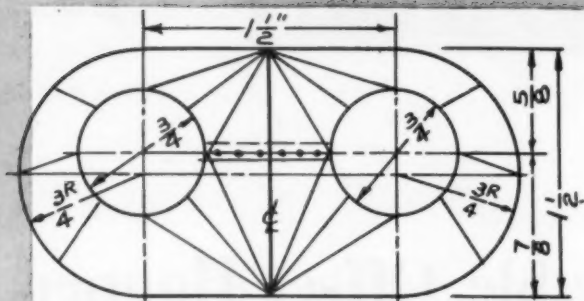
a) Draw horizontal and vertical center lines and mark the intersection point 0. With 0 as center and given radius $\frac{3}{4}$ in., draw a half circle to the left and where the half circle intersects the vertical center line mark the top point 11 and the lower point 15. Divide the half circle into 4 equal spaces and number the points 12, 13, and 14.

b) From points 11 and 15 draw horizontal lines to the right of the vertical center line. Measure $\frac{3}{4}$ in. from

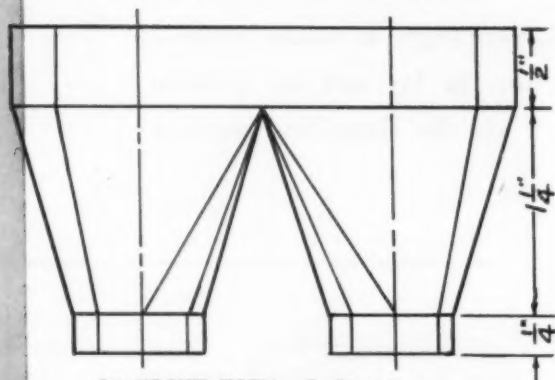


both points and mark the top point 10 and the lower point 16; draw the vertical line 10-16.

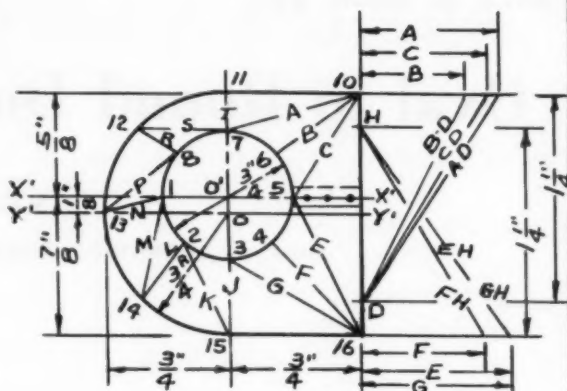
c) Mark the horizontal center line Y'Y'. Measure $\frac{1}{8}$ in. above line Y'Y' and draw the horizontal line X'X'. Establish point 0' on the vertical center line where line X'X' crosses it and with this point as center and given radius $\frac{3}{8}$ in., draw a circle. Divide the circle into eight equal spaces and number the points 1, 2, 3, 4, 5, 6, 7, and 8 as indicated.



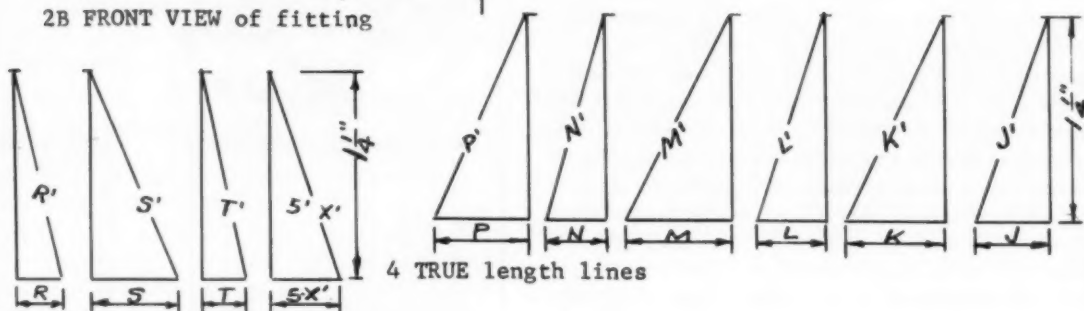
2A PLAN VIEW of double hopper



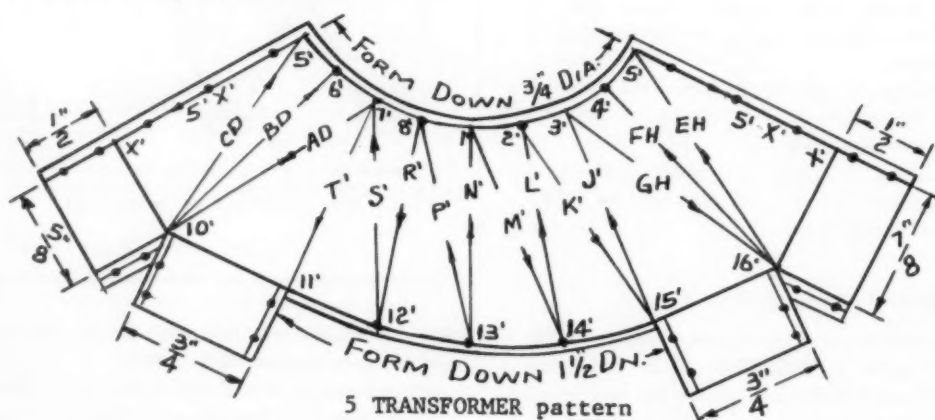
2B FRONT VIEW of fitting



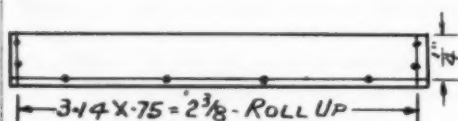
3 HALF PLAN (simplified method)



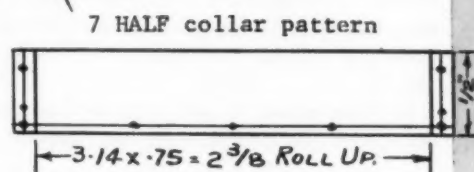
4 TRUE length lines



5 TRANSFORMER pattern



6 COLLAR pattern



7 HALF collar pattern

d) From point 16 draw lines to points 3, 4, and 5. Mark these lines G, F and E. From point 10 draw lines to points 5, 6, and 7 on the circle and mark the lines A, B, C. Draw the work lines J, K, L, M, N, P, R, S, and T as shown.

e) From point 10 (Fig. 3) measure down line 10-16 the given $1\frac{1}{4}$ in. vertical height and locate point D. From point 16 (Fig. 3) measure up line 10-16 the given distance $1\frac{1}{4}$ inch and locate point H.

f) Extend the line 11-10 to the right of point 10 (Fig. 3). Transfer lines A, B and C to the extended line and draw the hypotenuse lines BD, CD and AD. Extend the line 15-16 to the right of point 16. Transfer the lines G, F and E to the extended line and draw the developed lines GH, FH and EH.

g) Draw six right angles. Measure up the given $1\frac{1}{4}$ in. height on all six vertical legs. From Fig. 3 transfer the work lines J, K, L, M, N, P, R, S, T, and 5X' to the horizontal legs and mark the hypotenuse lines J', K', L', M', N', P', R', S', T' and 5'X'.

To Lay Out the Transformer Pattern, Fig. 5 —

a) Draw a vertical line and establish point 13' at the base. From the true length lines (Fig. 4) set a compass at line length N' and with point 13' as center draw an arc on the vertical line and mark the point 1'.

b) With developed line P' (Fig. 4) as radius and point 13' (Fig. 5) as center, draw an arc to the left of point 1'. With equal space 1-2 (on the $\frac{3}{8}$ in. radius circle) as radius and point 1' (Fig. 5) as center, cut arc P' and mark the point 8'.

c) Set a compass at line length R' (Fig. 4) and with point 8' (Fig. 5) as center, draw an arc to the left of point 13'. With equal space 13-12 on the $\frac{3}{4}$ in. half circle as radius and point 13' (Fig. 5) as center, cut arc R' and mark the point 12'.

d) With hypotenuse line S' (Fig. 4) as the radius and point 12' (Fig. 5) as center draw an arc to the left of point 8'. With equal space 8-7 (Fig. 3) as radius and point 8' (Fig. 5) as center, cut arc S' and mark the point 7'.

e) With the hypotenuse line T' (Fig. 4) as radius and point 7' (Fig. 5) as center, draw an arc to the left of point 12'. With the equal space 12-11 on the $\frac{3}{4}$ in. radius half circle (Fig. 3) as radius and point 12' (Fig. 5) as center, cut arc T' and mark the point 11'.

f) Measure the hypotenuse line AD (Fig. 3) and with point 7' (Fig. 5) as center draw an arc to the left of point 11'. With line 11-10 (Fig. 3) as radius and point 11' (Fig. 5) as center cut arc AD and mark the point 10'.

g) Measure line BD (Fig. 3) and with point 10' (Fig. 5) as center draw an arc to the left of point 7'. With the equal space 7-6 on the $\frac{3}{8}$ in. radius circle (Fig. 3) as radius and point 7' (Fig. 5) as center, cut arc BD and mark the point 6'.

h) With line CD (Fig. 3) as radius and point 10' (Fig. 5) as center, draw an arc to the left of point 6'.

With equal space 6-5 on the $\frac{3}{8}$ in. radius circle (Fig. 3) as radius and point 6' (Fig. 5) as center, cut arc CD and mark the point 5'.

i) Measure the hypotenuse line 5'X' (Fig. 4) and with point 5' (Fig. 5) as center, draw an arc to the left of point 10'. With line 10-X' (Fig. 3) as radius and point 10' (Fig. 5) as center, cut arc 5'X' and mark the point X'.

j) Set a compass at hypotenuse line length M' (Fig. 4) and with point 1' (Fig. 5) as center, draw an arc to the right of point 13'. With equal space 13-14 on the $\frac{3}{4}$ in. half circle (Fig. 3) as radius and point 13' (Fig. 5) as center, cut arc M' and mark the point 14'.

k) With line L' (Fig. 4) as radius and point 14' (Fig. 5) as center, draw an arc to the right of point 1'. With equal space 1-2 on the $\frac{3}{8}$ in. radius half circle (Fig. 3) as radius and point 1' (Fig. 5) as center, cut the arc L' and mark the point 2'.

l) Working from Fig. 4, measure line K' and with point 2' (Fig. 5) as center draw an arc to the right of point 14'. With equal space 14-15 on the $\frac{3}{4}$ inch radius half circle (Fig. 3) as radius and point 14' (Fig. 5) as center, cut arc K' and mark the point 15'.

m) Measure the line J' (Fig. 4) and with point 15' (Fig. 5) as center draw an arc to the right of point 2'. With point 2' (Fig. 5) as center and equal space 2-3 on the $\frac{3}{8}$ in. radius circle (Fig. 3) as radius, cut arc J' and mark the point 3'.

n) Measure the hypotenuse line GH (Fig. 3) and with this distance as radius and point 3' (Fig. 5) as center, draw an arc to the right of point 15'. With line length 15-16 (Fig. 3) as radius and point 15' (Fig. 5) as center, cut arc GH and mark the point 16'.

o) Set a compass at hypotenuse line length FH (Fig. 3) and with point 16' (Fig. 5) as center draw an arc to the right of point 3'. With equal space 3-4 on the $\frac{3}{8}$ in. radius circle as radius and point 3' (Fig. 5) as center, cut arc FH and mark the point 4'.

p) With line distance EH (Fig. 3) as radius and point 16' (Fig. 5) as center, draw an arc to the right of point 4'. With equal space 4-5 on the $\frac{3}{8}$ in. radius half circle (Fig. 3) as radius and point 4' (Fig. 5) as center, cut arc EH and mark the point 5'.

q) Working from Fig. 4, set a compass at hypotenuse line length 5'X' and with point 5' (Fig. 5) as center, draw an arc to the right of point 16'. With line length 16X' (Fig. 3) as radius and point 16' (Fig. 5) as center, cut arc 5'X' and mark the point X'.

r) Draw end lines downward at 90 deg to lines X'10', 10'11', 15'16', 16'X'. Measure down $\frac{1}{2}$ in., and draw lines parallel to the given lines.

To calculate the collar length of the $\frac{3}{4}$ in. radius half circle, multiply the given radius by the constant 3.14 which equals $2\frac{3}{8}$ in.

The $\frac{3}{8}$ in. radius collar is calculated by multiplying the given diameter of $\frac{3}{4}$ in. by 3.14 which also equals $2\frac{3}{8}$ inches.

Add allowances for seams and joints, lay out the rivet holes and mark the patterns for fabrication.

Mobile Lab Studies Extended Plenum System In Second Story Apartment

... heated by a counterflow
furnace with subfloor ducts located in
joist space above ground floor residence

SECOND IN A SERIES OF FIVE ARTICLES

IMPROVED ENGINEERING and installation practices are inevitable when performance data from actual jobs can be evaluated to point out the principles employed and the results of their application. With this objective in mind, the National Warm Air Heating and Air Conditioning Association undertook a study of five forced warm air heating systems in different houses that point the way to better heating performance, both from a comfort and a mechanical point of view. This and subsequent articles in this series are reports of the results obtained from the study.

This article describes an extended plenum, subfloor duct system for a second story apartment. The counterflow furnace is located in an equipment room on the second floor. The ducts are located in the joist space between the first floor ceiling and the floor of the second story.

All eight branch ducts are 4 in. in diameter, and all registers are $2\frac{1}{4} \times 14$ in., located at the perimeter of the apartment in the floor or in the baseboard. The return system consists of five intakes low in the partition wall for the furnace closet, all connected to a return plenum located above the furnace.

Three Room Apartment Is on Second Story

This is a second story apartment located above the first story rooms described in last month's article. The house is a two story brick veneer residence. The apartment is reached by an individual stairway. The apartment consists of a bedroom, living room, kitchen and bathroom, with a hallway and furnace closet.

The two story building was completed at a total cost of \$24,000, not including land or garage.

The attic has a maximum height of 7 ft, and has three vents, each with about 1.5 sq ft free area.

The brick veneer walls are insulated by 1 in. batts behind dry wall. The ceiling has 2 in. wool batts.

Windows, Doors Tight

The windows and doors are tightly fitted and weatherstripped. All windows are wood, double-hung, and have storm sash.

The design temperature is + 10 F and the degree days for the locality average about 4200 for the year.

The design heat loss for the second floor apartment is only 19,260 Btuh. No heat loss is assumed for the floor. For the floor area of 620 sq ft, the design heat loss corresponds to 31.1 Btuh per sq ft of floor area.

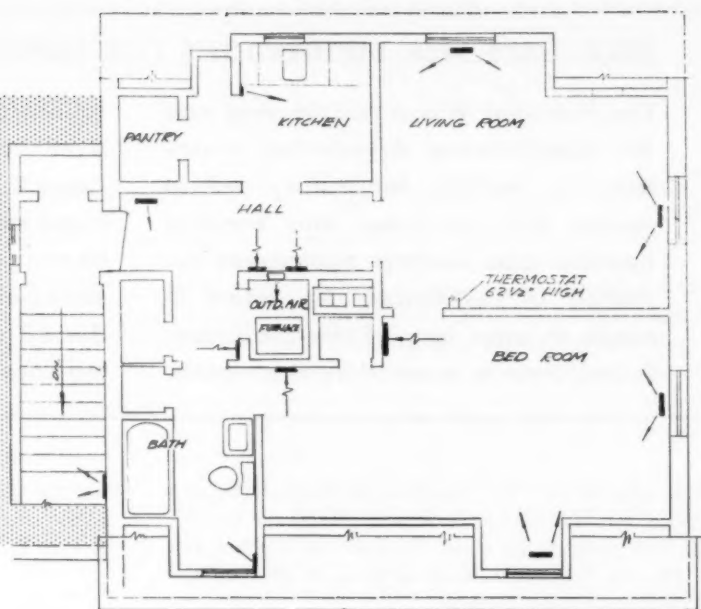
Furnace Located in Closet

The oil-fired counterflow furnace is located in a small furnace closet on the second story. The burner nozzle is rated to provide 75,000 Btuh bonnet capacity. The centrifugal blower is driven by a $\frac{1}{4}$ hp motor.

Five of the supply registers are in the floor. Those located in the bathroom and kitchen are placed low in a side wall, and one in the front entry is high in a side wall.

The five return air intakes are clustered around the furnace closet in the middle of the apartment. These intakes are connected to a ceiling plenum located above the furnace casing. Two of the intakes are 10×5 in.,

THREE ROOM APARTMENT is heated by extended plenum system with eight 4 in. branch ducts and perimeter supply registers. Five return air intakes are located in wall of furnace closet



ON UNUSUAL HEATING SYSTEMS

two others are 14×5 in. and the fifth is 30×5 in. All are located in the baseboard.

Combustion Air Supplied

The furnace closet is completely fire-resistant. The floor is clay tile, the walls are brick, and the ceiling is sheet metal. Furthermore, a $12 \times 31\frac{1}{4}$ in. duct is used in the studding space to permit attic air to enter the furnace closet through a 14×4 in. register; the outside air is for combustion purposes.

The weather was mild during the week, varying from a minimum temperature of about 38 F to a maximum in excess of 70 F. On the second and third days (March 15 and 16, 1955) the skies were cloudy and rain frequently fell. On the fourth day, when most of the data was recorded, the skies were clearing, the wind was moderate from the northwest, and the sun was shining. The temperature range on the fourth day was from 38 to 52 F, with an average of 45 F.

The following settings of the control equipment were used during the testing period:

Room thermostat setting	70 F
Fan switch cut-in point	130 F
Fan switch cut-out point	100 F
Limit switch cut-out point	200 F

The thermostat is located $62\frac{1}{2}$ in. above the floor and a 6 in. barometric draft regulator is used in the smoke pipe. No adjustments were made before the test.

The occupant is a single woman over 20 years of age, who is away from the apartment during the day. Her previous experience was with a hot water system which

she considered objectionable. She expressed satisfaction with the forced air system because of "more even heat." However, she considers the kitchen cold. She has not noticed any excessive air motion.

Table 1 summarizes recorded room air temperatures and temperature differentials found when the outside temperature was 41 F and the thermostat setting was 70 F.

The 2.2 deg temperature differential from floor to ceiling amounted to 0.76 deg per 10 deg change in indoor-outdoor temperature difference. The temperature differential of 1.1 deg from floor to 30 in. level amounted to 0.38 deg per 10 deg change in indoor-outdoor temperature difference. Both values are reasonably low.

The range of room air temperatures is small, varying from 71.0 F in the kitchen to 72.3 F in the bathroom when the outdoor temperature was 41 F.

Control of room air temperatures is not good, since the variations at the 30 in. level were 5 F during a burner cycle. The range of register air temperatures during a burner cycle was large, the test showed, averaging 44 deg for the seven registers. Normally, large variations in register air temperature are not conducive to good room air temperature control.

The measured register air velocities do not exceed 220 fpm. The air flow rate as determined from a furnace heat balance is 713 cfm. However, this value is not reliable since the oil flow was not measured, but based on the nozzle rating alone. Measurements of the supply air volume indicated that 192 cfm circulates through the system. This is extremely low for the area of the apartment. A calculation of the air volume handled by the five return openings showed 425 cfm air circulation. No

FIELD TESTS SEEK SUGGESTIONS FOR IMPROVED HEATING PRACTICES

The National Warm Air Heating and Air Conditioning Association maintains a mobile laboratory which moves into an area and surveys heating and cooling equipment installed in residences. No effort is made to alter any of the conditions found. Data is secured by the mobile

laboratory technician and turned over to the Engineering Advisory Council for evaluation. A summarized report of five unusual types of heating systems is reported in this series of articles. The tests were conducted during the 1954-1955 heating season. This is the second report.

explanation is available concerning the large discrepancy between the calculated air flow rates through the registers and that through the return intakes. The air flow rate of 425 cfm has been selected as the most representative of the actual volume handled.

Velocities High in Small Return Grilles

The return intake data shows that the air flow rate through the 14 × 5 in. grilles is just as large as that through the 10 × 5 in. grille. Through smaller grilles, the velocities were correspondingly higher.

Table 2 is a summary of floor surface temperatures recorded when the outdoor air temperature was 41 F and the thermostat was set at 70 F.

The floor surface temperatures were not less than 62 F when the outdoor air temperature was 41 F. In contrast, the floor surface temperatures for the first floor apartment were all above 70 F on a 42 F day because of the floor panel heating effect from the crawl space warm air plenum system.

Indoor relative humidities of 42 percent when the outdoor air temperature is 50 F are not excessively high. No difficulty with condensation should be experienced in colder weather, particularly since storm sash is used.

In spite of fairly large variations in the outdoor moisture content, the variations in indoor moisture content are quite small, as shown by the dew point temperature data recorded.

Duct Static Pressures Are Low

The static pressures of the duct system are low. The 0.14 in. total is well below the design value of 0.20 in. even though the air flow corresponds to that for a temperature rise of 62 deg. At first glance, the small temperature rise would seem to indicate that the air flow rate was excessive and the blower speed should be reduced.

However, the flue gas loss data shows that the flue gas temperature is exceedingly high. The flue loss is also high (49.5 percent). The evidence seems not to indicate

that the air flow rate is too high but that heat transfer is not effectively accomplished and the air is slipping past the heating surface without being adequately heated.

Fuel Bills Too High

The fact that the flue loss is high and the furnace efficiency is low is supported by the high fuel oil consumption for the furnace. The purchases amounted to at least 686 gal from June 24, 1954 to March 16, 1955, during which time the degree days totaled 3907.

Based on a design heat loss of 19,260 Btuh for a design outdoor temperature of + 10 F, the overall fuel efficiency was estimated to be only 28 percent. Either the design heat loss is grossly underestimated or the manner in which the heating plant operates contributes to the large fuel bill. The first impulse would be to state that the heat loss from the underfloor ducts is affecting the first story apartment and hence is not contributing to the second story heat losses. If this is the case, the overall efficiency for the first story rooms should be high. Such is not the case. The efficiency was estimated as being about 55 percent.

Combustion Efficiency, Heat Transfer Poor

The occupant opened the bedroom windows at night and left the thermostat untouched. Nothing was said about the door to the bedroom and it is not known whether an abnormal heat loss was occurring at night. In any case, a flue gas temperature of 820 F with 5 percent CO₂ content of the flue gas indicates poor combustion efficiency.

The small temperature rise of 62 deg is not an indication of too much air flow, but rather of poor heat transfer. Before making any reduction in the blower speed, it would be advisable to investigate the cause of the high flue gas temperature.

Reserve Capacity Too Great

Data recorded on burner operation, when extrapolated to design temperature conditions, indicated that the

TABLE 1 — TEMPERATURE DIFFERENTIALS from floor to ceiling and from floor to 30 in. level are reasonably low; range of room air temperatures is rather small when outdoor temperature is 41 F

	Temperature, deg F					
Room	Bed room	Living room	Kitchen	Hall	Bath room	Average
3 in. below ceiling	72.1	73.0	71.5	72.2	74.7	72.7
30 in. level	71.4	71.5	71.0	71.3	72.3	71.5
3 in. above floor	69.2	70.0	70.3	71.0	71.7	70.4
Differentials between levels						
Ceiling-floor	2.9	3.0	1.0	1.2	3.0	2.2
30 in. level-floor	2.2	1.5	0.7	0.3	0.6	1.1
Floor surface	68.4	68.2	70.9	71.4	70.1	69.8
Floor air to floor surface	0.8	1.8	- 0.6	- 0.4	1.6	0.6

TABLE 2 — FLOOR SURFACE temperatures were not less than 62 F when outdoor temperature was 41 F and thermostat was set at 70 F

Room	Floor surface temperature, F	
	Center of room	Exposed wall
Kitchen	70.9	70.4
Hall	71.4	64.0
Bedroom	65.4	62.3
Living room	68.2	64.5
Bath	70.1	69.5

burner could be expected to operate about 60 percent of the time at 10 F. This is an apparent reserve capacity of 40 percent which is far too great. This is a clue that a reduction in oil input would be desirable. Unfortunately, with a 0.75 gph burner nozzle the chances of reducing the input are slight, unless the actual oil input happens to exceed the nozzle rating.

Blower Operates Nine Times Each Burner Cycle

Blower data obtained showed that 100 percent blower operation per day might occur when the outdoor tem-

perature reached 15 F. It is apparent that the fan switch has not been set to give CAC operation. Further evidence of the fact that an adjustment of the fan switch is needed is given by the operating periods recorded during the burner test period. The blower was operating (more appropriately, it was pulsating) about nine times for each burner period.

This blower operation not only provides poor room air temperature control but also is detrimental to the drive. The large swings in air temperatures at the plenum, the register, and in the room are far from desirable.

One fact that should be kept in mind is that a counter-flow furnace with a fan switch setting of 130 to 100 F and a limit switch setting of 200 F can be expected to operate irregularly. Offhand, suspicion would rest on the location of the fan switch, since each time the blower starts operating, the relatively cool air could strike the fan switch and cause it to cut out. This furnace installation needs some further investigation.

Another unusual heating job will be discussed in the third article in this series.

Central Cooling Nearly Doubled in Baltimore

CENTRAL residential cooling installations during 1956 in the Baltimore area totaled 92 percent more than were made in 1955. The records so far for 1957, however, do not show as many installations as for the same period last year. For the first four months of 1957, 70 contracts were reported as compared with 100 for the same period last year. Nevertheless, an increase is expected this year over the total for 1956.

To be specific, there were 382 installations recorded for 1956 involving 1863 hp or an average of about 4.9 total hp per installation. The 1863 hp is less than 4.5 percent of the total horsepower installed in the area for all air conditioning last year.

Approximately one-half of the central residential installations were made in new homes and one-half in

old or existing residences. There was a definite increase in the trend toward air cooled equipment. Figures show that 78 percent of the installations were air cooled, and of the water cooled installations, about two-thirds used cooling towers.

Because of this trend toward more air cooled equipment, more horsepower per installation is indicated since an air cooled unit requires more total horsepower per ton of cooling than water cooled equipment. Some of the installations in the 3 to 4.9 hp group are of 2 or 2.5 ton capacity. Almost half of the jobs are in the 3 to 4.9 hp classification.

Although installations were made in every month of the year, 17.2 percent of the total were made in June and 18.8 percent in July. The 384 installations were made by 93 contractors or an average of 4.1 per con-

tractor. There were 50 concerns who made only 1 installation, 14 companies who made 2 each, and 7 who made 3 each. The most installations were made by a sheet metal, heating and air conditioning contractor who did 59 or 15.4 percent of the total. A similar concern was second, doing 51 or 13.3 percent of the jobs.

About 25 percent of the room air conditioners in the city were sold in 1956, about 15 percent of the total contract installations other than room coolers were made in 1956 and 38 percent of the residential central system installations were made last year. From this data, it is evident that central residential applications are increasing faster than the others.

The editors acknowledge the cooperation of Gayle B. Priester, Baltimore Gas and Electric Co., in providing the information for this article.

Award To Dealer Tells His Prospects That He *Knows* Air Conditioning

"Air Conditioning Seller—Owner—User Certificate" available from American Artisan is a valuable sales promotion tool



IDENTIFICATION as a dealer who knows what he's talking about is displayed — in the form of Artisan's "Seller-Owner-User" Certificate — by Robert Strong, first recipient of the sales tool, following presentation

THE FIRST of American Artisan's new "Air Conditioning Seller—Owner—User" certificates was presented last month to Robert Strong, S & W Heating Co., Chicago, whose own home was air conditioned last year. S & W's office and shop have had summer air conditioning for four years.

Mr. Strong has found that cooling prospects often ask if he has air conditioning in his own home, and of course he can answer "yes" to that question. "Air conditioning in your own home," says Mr. Strong, "gives you a fountain of knowledge to draw upon in selling comfort, and also gives you first-hand data on cooling costs."

Certificate Identifies Qualified Dealer

The certificate awarded Mr. Strong by American Artisan is on display in his office. It states that he is a residential air conditioning dealer selling and installing systems for year 'round comfort, and is also an owner and user of central summer air conditioning in his home and place of business. "Thus," says the certificate, "he is well qualified to know, by his own first-hand experience, the many advantages and benefits to comfort, health and efficiency provided by year 'round air conditioning."

Copies of the "Air Conditioning Seller—Owner—User Certificate" are available to residential air conditioning dealers without obligation, on request to American Artisan. In three colors, 14 by 17 inches in size, and in-

scribed with your name and your company name, the certificate is suitable for display or for framing. To get one, fill out and sign the coupon, and mail it to The Editors, American Artisan, 6 N. Michigan Ave., Chicago 2, Ill.

How to Use Artisan Certificate

In addition to telling your prospects in an authoritative way that you really know air conditioning and its many benefits, that you really believe in it yourself, and that you have first-hand experience from actually living with it, there are many ways you can use the certificate award in your own selling and promotion. Your local newspapers, for example, may welcome as a news item the story of the award to you, and what you have to say about your own experience with air conditioning in your own home and/or place of business. Your own advertising — direct mail, newspaper, radio and TV — can feature your first-hand experience with air conditioning, and the certificate awarded you as a user as well as a seller of year 'round home comfort. A couple of suggestions for a newspaper story and for an advertisement are given here.

The first step in getting your air conditioning sales promotion program based on the "Air Conditioning Seller—Owner—User—Certificate" going is to fill out the request coupon and mail it to American Artisan. Your certificate, properly inscribed, will be mailed to you promptly.

M. & P. Heating Gets Air Conditioning Award

Edward Wilson, of M. & P. Heating & Sheet Metal Co., 333 Forest St., has been awarded an "Air Conditioning Seller—Owner—User Certificate" by American Artisan, a national magazine. The award certifies that Mr. Wilson is a residential air conditioning dealer selling and installing systems for year 'round comfort, and that as an owner and user of central summer air conditioning in his own home and place of business, he is well qualified to know, by first-hand experience, the many advantages and benefits to comfort, health and efficiency provided by year 'round air conditioning.

Mr. Wilson's home, on the south side, was air conditioned last year. Based on his family's experience with the benefits of indoor comfort in summer as well as in winter, he foresees the day when summer air conditioning for homes in this area will be as well accepted as is good winter heating.

SUGGESTED NEWS ITEM for your local paper tells about the award of the certificate to you and about your first-hand experience with summer air conditioning



Ask My Wife!

... says Ed Wilson

"Ask my wife what she thinks of summer air conditioning," says Ed Wilson, of M. & P. Heating & Sheet Metal Co., 333 Forest St. "She'll tell you we've never been a happier, healthier, more comfortable family than we have since we air conditioned our own home. All of us — the kids included — sleep better, eat better, spend more time at home now that it's the most comfortable place in town. Phone me today, and I'll be glad to tell you how you, too, can enjoy the many benefits of year 'round air conditioning."

Ed Wilson

M. & P. Heating & Sheet Metal Co.

333 Forest St.

Phone: 1234

HERE'S A SUGGESTED AD you can run in your local newspaper about your first-hand air conditioning experience. Same theme can be used in direct mail, and on radio and TV

**To: The Editors
American Artisan
6 N. Michigan Ave.
Chicago 2, Ill.**

Please send me free, inscribed with my name and my company name, an "Air Conditioning Seller—Owner—User Certificate" suitable for framing or for display.

I have central summer air conditioning in my home, installed _____ (month and year). Its capacity is _____ hp.

I have summer air conditioning in my place of business, installed _____ (month and year). Its capacity is _____ hp.

(Please print)

Name: _____

Company: _____

Street Address: _____

City and State: _____

Signed: _____

**MAIL
THIS
COUPON
TODAY
!**



COOLING DEALERS' HANDBOOK

How to Solve Engineering and Installation Problems in Residential Cooling

The demand for remote cooling units in various arrangements places the responsibility for selection and connection of components on the air conditioning dealer, who must first be able to determine . . .

How Air Flows Through Coils

By S. W. Reid

**Air Conditioning Engineer
Gilbert Associates, Inc.**

IN ONE SENSE we have witnessed in the past 15 or 20 years a complete cycle in residential air conditioning equipment. In the early days there was no such thing as a factory-assembled cooling unit. The few people who wanted home cooling at that time had to purchase components and then erect, pipe and test them on the job.

In the 1930's, perhaps as an outgrowth of their experience with small, factory-assembled refrigeration systems in refrigerators, manufacturers began to market larger ready-made systems in a cabinet with a fan. Thus, the self-contained summer air conditioner was born. Early units of this type were ideally suited to commercial establishments where, in

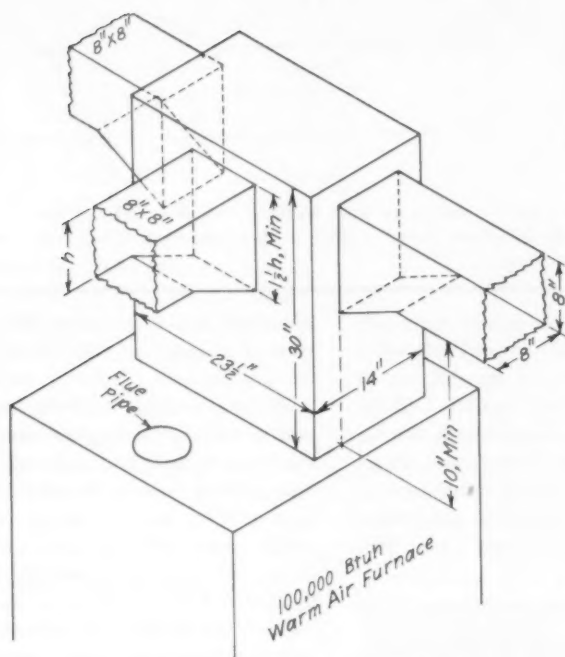
most cases, they could be readily accommodated either within the conditioned area or in a room adjacent to it. In many cases, no duct work was required, or at least the duct system was very simple. The owner usually was not overly concerned about its appearance, nor did he demand that equipment be located in some remote spot such as a crowded basement. In those days, the use of municipal water directly for condenser cooling was not restricted, so, generally speaking, installations were simple.

New Designs Demanded

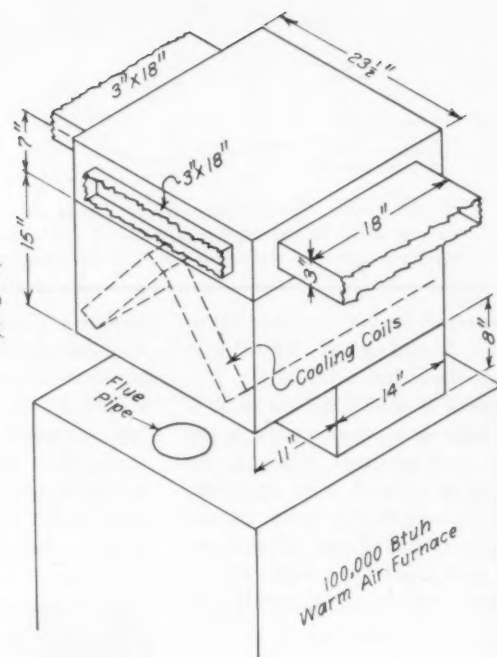
With the postwar housing boom and high level of prosperity, air conditioning manufacturers foresaw a vast opportunity to expand their cooling markets in the residential field. Early attempts were made to supply this market with adaptations of the

store cooler type of self-contained unit, but it soon became evident that this equipment was best suited for only the largest residential systems. Nevertheless, installations that were made served to interest builders in the idea of home air conditioning and they in turn began to demand of the air conditioning industry equipment designed particularly for residential application.

The conception of the complete, factory-assembled and tested refrigeration system in a single cabinet was carried into the first designs of equipment specifically intended for house cooling. Experience showed shortly, however, that even more flexibility of arrangement was necessary to meet the variety of application problems that exist in residences. Demands were made for both water and air cooled models, for units that could be installed in an attic, basement or closet, for both vertically



1 EXISTING PLENUM for 100,000 Btuh warm air furnace adhered to standards of good practice with 10 in. between bottom of plenum and bottom of takeoff duct



2 ADDITION OF COOLING coil to plenum in Fig. 1 reduced space available for duct takeoff to 7 in. Installing dealer changed trunk sizes to 3 x 18 in., and pressure loss is excessive

and horizontally mounted units, for units that could be added to an existing warm air furnace and for units that could be incorporated in the same cabinet with a furnace.

Remote Arrangements Offered

To meet all the application demands on their equipment, many manufacturers broke away from earlier conceptions of the single package unit and began to offer the cooling coil and condensing unit as separate components which could be connected in the field. They also offered coil and compressor assemblies for use with a remotely located air cooled condenser.

Presently there is on the market cooling equipment that will lend itself to almost any physical arrangement. This type of equipment completes the cycle mentioned earlier, since the installing dealer is once again called on to select and connect components much as he had to do in the first years of air conditioning. When the component is a cooling coil or condenser coil, proper air flow be-

comes a field problem, so the dealer must be prepared with at least the basic knowledge of what makes a good job and what makes a poor job.

Fig. 1 represents an existing warm air plenum for a 100,000 Btuh furnace. Fig. 2 illustrates an actual proposal made by a certain dealer to add a cooling coil. In the following discussion certain points will be established that make the contemplated change a poor one.

Make Plenum Deep as Possible

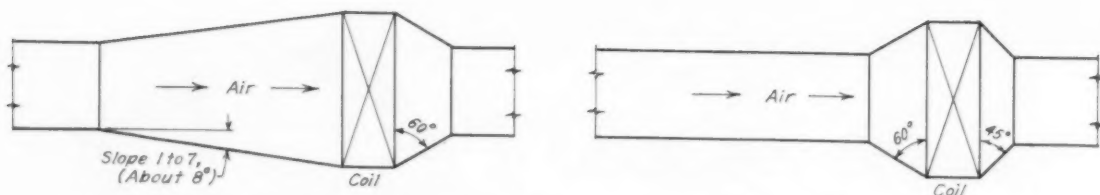
A properly constructed plenum is an important part of every forced warm air system. The plenum should be as high as basement conditions or ceiling height will allow. (Top of the plenum may be no closer than 1 in. to the structure above it in accordance with The National Fire Protection Association Standard 90B.) This tends to equalize the pressure and temperature of the air leaving the bonnet through the trunk ducts. Good practice (as outlined by The National Warm Air Heating & Air Conditioning Association) requires a

minimum of 10 in. between the bottom of the plenum and the bottom of the duct leaving the plenum as shown in Fig. 1.

Insertion of the coil as shown in Fig. 2 reduces the space available for duct takeoff to 7 in. For some reason the dealer proposed to change the trunk sizes from their original size of 8 x 8 in. to 3 x 18 in. Each duct must carry 400 cfm, which is one-third of the total air handled by this size furnace. Air velocity in the 8 x 8 in. ducts was approximately 950 fpm. Air velocity in the 3 x 18 in. ducts would be about 1400 fpm, well above the maximum velocity of 1200 fpm recommended by the American Society of Heating and Air Conditioning Engineers. The aspect ratio of the proposed trunk ducts is 6 to 1. In practice trunks less than 8 in. deep or with an aspect ratio over 4 to 1 are seldom used.

Pressure Loss Is Too High

The trunk takeoff condition illustrated in Fig. 2 is considered poor as compared with that shown in Fig. 1



3 GRADUAL EXPANSION on inlet side of the coil (left) prevents air from breaking away from sides of the duct in eddies at the expense of uniform coil velocity. Minimum design (right) of duct transition section has sharper angles near coil which would produce more eddying

by reason of the high pressure loss it incurs. According to NWAHACA ratings, the entrance loss in Fig. 2 is equivalent to at least the loss in 35 ft of straight duct, whereas with proper design, such as shown in Fig. 1, the loss can be reduced to an equivalent 10 ft. If losses of this nature are not properly evaluated and allowed for when such a change is made, the air quantity can be considerably reduced.

Large Plenum Absorbs Sound

In addition to its function as an air distributor, the plenum also serves as a chamber for sound attenuation. Some authorities recommend that the plenum area be at least ten times greater than the area of the fan discharge duct. Lining the plenum with sound absorbing duct insulation, of course, improves its sound absorbing qualities. It is difficult to define just how much of the structure above the furnace in Fig. 2 could be considered plenum space, but it would certainly appear to be less effective as both a sound attenuator and air distributor than is the plenum shown in Fig. 1.

If trunk duct entrance and sound problems are created by making the change from Fig. 1 to Fig. 2, they can usually be solved by one means or another. There is, however, one apparent problem in the Fig. 2 arrangement which, because of the physical limitations of the cooling coil size with respect to the size of the opening in the furnace, will not be solved easily. That problem is the matter of getting proper air distribution over the face of the cooling coil.

At the point where air under pressure from the furnace blower enters the coil casing, the abrupt change in

section will cause an eddying condition which could very seriously affect air distribution over the coil, and as a consequence, coil capacity. Coil ratings are based on a uniform face velocity. With the arrangement shown in Fig. 2, the velocity would certainly be higher directly over the furnace opening, and it is conceivable that

air might flow in a reverse direction through a portion of the coil over the blanked area.

There is nothing basically wrong with locating a cooling coil over the discharge opening of a warm air furnace, provided there is ample headroom for a plenum above, from which reasonably designed trunk ducts may leave and provided that the coil section and furnace opening are matched properly so uniform air distribution over the coil is possible. These two requirements must be kept in mind by the dealer in planning his layout.

Slope Transition Gradually

When the cooling coil is to be inserted in a horizontal duct run, there are other factors to be considered. In the first place, the air velocity in a properly designed (according to ASHAE recommendations) residential trunk duct will be about 700 to 900 fpm. This is about twice the face velocity for which cooling coils are designed. Therefore, it is to be expected that the sectional area of the coil will be greater than the sectional area of the duct carrying air to and from it. Fig. 3 shows a preferred and a minimum design for the transition pieces. A gradual expansion on the inlet side of the coil is particularly important to prevent the air from breaking away from the sides of the duct in eddies which prevent uniform coil velocity. Fig. 4 shows what happens to distribution when a coil is located near an elbow.

In cases where a centrifugal blower and cooling coil must both be located by the dealer, space limitations will often not allow enough distance between the blower and the coil to get the slope indicated in Fig. 3 if the

THIS CONTINUING SERIES OF ARTICLES COVERS . . .

. . . all aspects of residential cooling, beginning in the August, 1952 Artisan with a complete rundown on:

FUNDAMENTALS . . .

. . . in a series of 20 articles which described the basic operating conditions of residential cooling equipment. Next, we turned to:

SPECIFIC PROBLEMS . . .

. . . of maintenance, service, installation and management, describing new techniques and presenting pointers on solving problems common to residential cooling. The current series describes:

CASE HISTORIES . . .

. . . and known problems which have actually been experienced and reported by dealers. Engineering, installing and servicing of cooling systems and their components are discussed by the author in answer to actual problems expressed by industry members.

4 LOCATING COOLING COIL near an elbow also produces eddying on inside curve of elbow and prevents uniform coil velocity

blower is located upstream from the coil in a blow-through arrangement. The solution is to place the blower downstream from the coil. With this relationship, the spacing can be fairly close, perhaps a foot or slightly less. This pull-through arrangement avoids blowing a high velocity stream of air at the coil and results in a fairly uniform air velocity entering the coil.

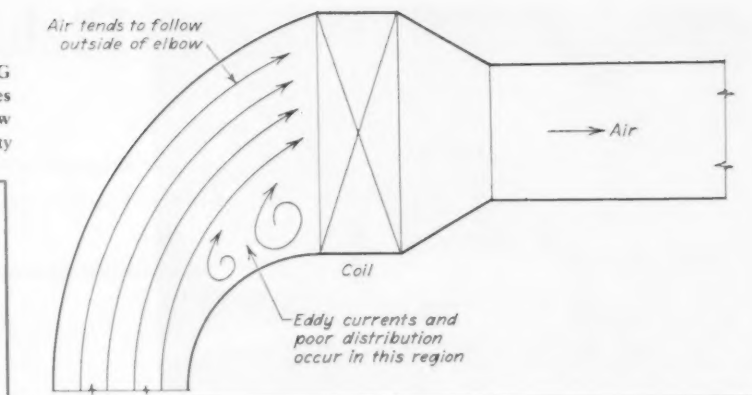
Condenser Needs Outdoor Air

Proper air flow through air cooled condensers is no less important than it is through cooling coils. Condensers need an abundant supply of outdoor air. When they are located outside, this is not a particular problem. However, the condenser should be placed so that the warm discharge air is carried away and not pocketed by adjacent building walls so it recirculates through the coil.

When the air cooled condenser is located in a basement or attic, establishment of an air circuit is sometimes more complicated. A duct must be installed to carry the warm air away from the coil and outside. If the condenser has a centrifugal type fan and if an adequately sized window is available, a way can usually be found to connect the two. Condensers with propeller-type fans cannot be used with a duct and usually will have to be located outside.

Provide Sufficient Free Area

In considering the size of available windows, it must be kept in mind that louvers and a bird screen will usually be required. These elements can reduce appreciably (by as much as 50 percent) the free area of the opening which is, of course, the only part that air can pass through. A little forethought in making certain that there will be suffi-



cient free area for the intended air quantity at a reasonable velocity can save a lot of grief resulting from high head pressures.

When an air cooled condenser is located in an attic or basement or other unconditioned space, it is not always essential that a direct duct connection be made to bring air to it. If the condenser room is closed from the conditioned space and if there is a second window that can be opened to let air in, the condenser room can serve as an intake plenum. Where it is desirable to ventilate an attic or a basement, this method can serve very well.

Intake Duct Is Most Reliable

Even though the above arrangement has advantages for certain ap-

plications, it should not be used without considering several factors. First, the intake should be a semi-permanent opening which will not have to be closed during rains, when the house is locked up or when the temperature drops. It should be kept open at all times except during the heating season. Second, the condenser should not draw air from a room in which there is combustion equipment such as furnace or water heater. The draft necessary for proper operation of this equipment might easily be upset and the products of combustion pulled into the space. Third, when a basement is used as an intake plenum for an air cooled condenser, the basement temperature will approach the temperature of the outside air. This fact must not be overlooked in calculating the cooling load. There is normally very little heat gain between an unvented basement and a conditioned first floor. Fourth, the continuous flow of outside air across a room will carry with it a certain amount of dust and dirt which will drop out and create a cleaning problem, the size of which depends upon the cleanliness of the air available.

The use of an intake duct to carry air to a condenser coil will enable the dealer to avoid the problems outlined above. However, ducts require space, which is not always available. If a duct is used, the design of the approach to the coil must be such that distribution will occur. Access panels on each side will help keep the coil clean. The accumulation of dirt can be just as effective in reducing coil efficiency as can poor air distribution.

What Is 'Air Conditioning'?

True air conditioning provides comfort in all seasons of the year, according to the American Society of Heating and Air-Conditioning Engineers. The ASHAE defines air conditioning as follows:

"Air conditioning is the process of treating air so as to control simultaneously its temperature, humidity, cleanliness and distribution to meet the requirements of the conditioned space."

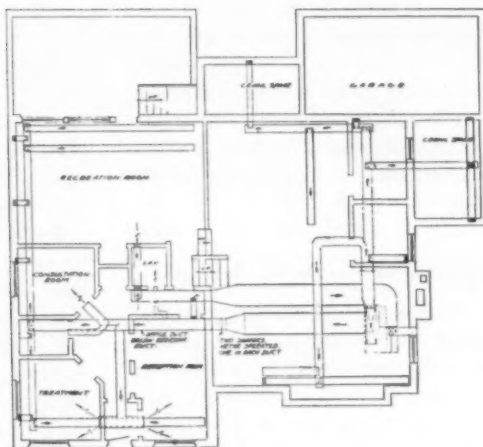


Field Test Traces

... with a three zone complexities and resulting limitations found, as a guide for dealers to use

THIS IS THE FOURTH

... IN A SERIES of reports on tests by the NWAHACA mobile laboratory which seek to expose and solve some of the problems cooling dealers may encounter in installing summer air conditioning systems in the modern multi-level homes



LARGE RESIDENCE has five distinct levels: served by three zone year 'round system controlled

AS THE DEMAND grows for central cooling in residences, a trend toward the attractive multi-level home has also become established. To help dealers overcome any obstacles which might exist toward tying these two demands together, investigations are constantly being conducted to locate and correct these limitations. Tests by the National Warm Air Heating and Air Conditioning Association's mobile laboratory show that areas in split-level houses that are easy to heat are difficult to cool and vice versa.

Two Problems Must Be Solved

The air distribution problems uncovered during the 1955 cooling season by the National Warm Air Heating and Air Conditioning Association's field investigation committee are probably due to two factors. These are:

- 1) The cool air leaving the evaporator coil is carried through ducts located in spaces which are at higher temperatures than is the air within the ducts. Some of these ducts are in occupied areas and any loss of cooling capacity reflected by the temperature gain of the air passing through these ducts does represent useful cooling. Other sections of the duct system are in areas that are not occupied, such as the basement and between the wall studs, where the amount of useful cooling is questionable.

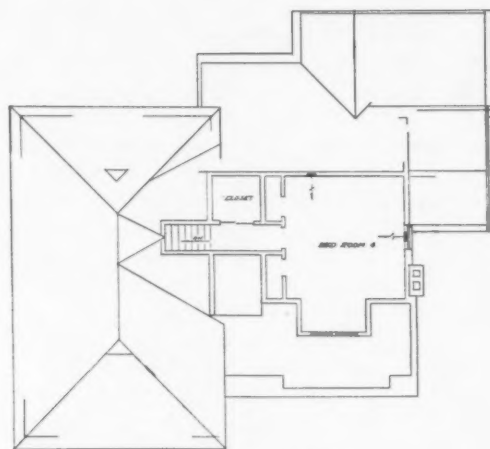
Heat gain to the ducts results in a temperature increase of the circulating air within the ducts and consequently the air leaves the supply air registers in the upper level rooms at a higher temperature than it does in those rooms closer to the cooling unit. Such a temperature gain will be reflected in a larger air flow rate requirement than would be the case if no heat gain occurred. When it is realized that the normal temperature differential of the air across the cooling coil in these jobs was only about 12 to 18 deg, even a small temperature gain of 3 deg can account for a reduction in cooling ability of about 20 to 25 percent.

- 2) Cool air introduced into a room should be thoroughly mixed with the warmer room air to produce the desired indoor temperatures. If the mixing is not complete, the cool air stratifies and settles near the floor. Then in the normal course of events, since there is no dam to restrain the free movement of air, the cool air tends to settle to lower elevations by sliding down stairs and drifting through openings between the levels of the house.

One obvious answer is to insulate the ducts in the lower level, basement and crawl spaces. While this appears to be a partial solution during the cooling cycle, it probably would not overcome entirely the difficulties caused by inadequate ducts.

Cooling Problems in 5-Level Residence

year 'round air conditioning system, common split-level structural to even distribution of cooled air. Here's what the mobile lab in solving many of the difficulties in cooling this type of home



basement and lower levels (left); middle and upper levels (center) and top level (right) which are by separate room thermostats and zone dampers with switches to regulate compressor operation

The split-level house described this month is a 58 × 50 ft house with five distinct levels:

Basement level: furnace room and utilities (not conditioned)	
Lower level: recreation room and three office spaces	824 sq ft
Middle level: living room, dining area, kitchen and vestibule	970 sq ft
Upper level: three bedrooms, two baths, balcony	836 sq ft
Top level: one bedroom and storage closet	330 sq ft
Total occupied and conditioned area	2960 sq ft

The basement level is at one side of the lower level and a few feet below it. Over the basement is the middle level with the living rooms. Over the lower level is the upper level with the bedrooms. The top level with a single bedroom is over the middle level. The lower level is practically at grade.

A three room suite in the lower level is used as dental offices.

The design temperature for cooling in the geographical area along the eastern seaboard in which this house is located is 95 F dry bulb and 75 F wet bulb outdoors and 80 F dry bulb indoors. The daily range is considered low.

Construction Is Typical

Building construction features include standard frame wall construction with two-thirds of the lower section of the exterior wall covered with a brick veneer. The

upper one-third exterior section is wood shingles. The interior is dry wall. Two in. mineral wall blankets provide insulation for all exterior walls. Ceilings are dry wall; 4 in. batts insulate the bedroom ceilings exposed to the attic.

The roof is broken into several levels. The largest is a hip roof while the smaller roofs have gable ends with triangular louvered vents. Three roof vents are placed part way up the inclined hip roof. No attic ventilating fan is used. The roof is covered by gray asphalt shingles.

The attic over the bedroom level is of hip roof construction with small ventilators on the slope. The attic area over the living room level was made into a large bedroom, with one dormer opening facing south. Without cooling, this room would undoubtedly be untenable since there is inadequate cross ventilation and the roof is immediately overhead.

The house is on a corner lot, with two trees at the southwest corner of the property providing some shade during late afternoon.

House Has Two Crawl Spaces

There are two crawl spaces under the house, one below the rear porch and the other under the dining room extension. Neither is ventilated except to the basement,

BACKGROUND OF THESE REPORTS

A SERIES OF FIVE articles on heating split-level houses was published in the June through October, 1956 issues of *American Artisan*. The articles were summarized from data obtained by the National Warm Air Heating and Air Conditioning Association's mobile laboratory and evaluated by the association's field committee. This series on cooling split-level homes presents information from the same sources. This is the last of four articles.

The results of the heating investigations indicate that the lowest level of the house is the hardest to heat and is thus the coolest part of the building during the heating season. On the other hand, the upper level is the easiest to provide with winter comfort. An analysis of the data secured by the mobile laboratory during the summer of 1955 shows that the most difficult level to heat is the easier to condition during the summer and that the easiest area to pro-

vide with winter comfort is the most difficult to condition in summer.

The problems uncovered by the field investigation committee are by no means unsolvable, and would, in several cases, never have existed had the designers of the systems used the information available in the association's manuals. It should be obvious that care must be taken in the design and installation of year 'round air conditioning systems in split-level houses.

but the ground is covered with 2 in. thick concrete. The basement area, including the furnace utility room, is approximately 4 ft below grade level and has a concrete slab floor without edge insulation. The recreation room and dental offices, which are at ground level, also have concrete slab floors with no edge insulation.

Windows are double hung with wood sash.

The lawn is graded and slopes gently away from the house. The downspouts are connected to storm drains.

The structural framing of this house is typical split-level house construction. It is impossible to run a concealed duct from one end of the house to the other without numerous offsets and turns.

The house was completed in 1954.

System Is Oil-Fired, Water Cooled

Heat is provided by an oil-fired forced warm air furnace with a gun type burner. The bonnet rating is 115,000 Btuh. The blower is a 14 in. diameter wheel driven by a 1/3 hp motor and is used for both heating and cooling.

The cooling unit consists of a compressor, evaporator, and water cooled condenser assembled in an add-on type of casing attached to the furnace. The furnace blower circulates the air during the cooling cycle. Air from the blower is diverted through either the cooling coil or the heating section by means of a manually operated damper in the plenum which extends over both units. The water cooled condenser is rated to handle 102 gph with 55 F inlet and 105 F outlet water. The compressor is driven by a 3 hp motor and is rated at 36,000 Btuh with a sensible heat removal capacity of 24,000 Btuh. The required air flow through the cooling coil is estimated at 1200 cfm. The cooling coil is a three row coil with 425 sq in. of face area. It is installed vertically.

The compressor has standard and overload protection controls, and high and low side pressure controls set as follows:

Low side pressure cut-in point	35 psi
Low side pressure cut-out point	20 psi
High side pressure cut-out point	165 psi

The blower, controlled by a manual "off and on" switch, operates continuously during the cooling operation, except when stopped by the duct zone dampers. Changeover from summer to winter operation is accomplished by adjustment of a manually operated damper in the plenum and by changing the position of a "heating-cooling" switch.

The warm air furnace has the customary combustion control relay for an oil burner, a high limit control and a fan switch.

House Divided Into Three Zones

The zone control system consists of two-position motorized dampers placed in each of the three main supply trunk ducts. Each is controlled by separate room thermostats. The house is divided into zones as follows:

Zone A — dental office section on the lower level.

Zone B — middle level rooms, including the living room, dining area, kitchen and the single bedroom on the top level.

Zone C — upper level, including three bedrooms, two baths and balcony and the three supply air outlets in the recreation room in the lower level.

Zone dampers are equipped with suitable switches to stop the operation of the compressor as the dampers move toward the closed position and to stop the blower when all are closed. At the time of the tests the dental offices were not in use. The zone damper in the trunk duct supplying that area was closed and cooling was concentrated on the other areas of the house. The vanes in the three registers in the lower level recreation room had been closed and remained closed during the survey.

Use Perimeter Diffusers

The supply air outlets, used for both heating and cooling, on the upper, middle and top levels, are perimeter type, low side wall diffusers generally placed beneath the window. They had been designed to throw the major portion of the air upward with a lesser quantity

directed outward along the walls and still less sent down toward the floor. Those in the dental office section are high side wall diffusers about 6 ft from the floor. The recreation room on the lower level has side wall diffusers in the ceiling along the outside walls.

All return air registers are on inside walls near the floor. The single return register for the entire upper and top levels is on a wall opposite the stairs to the bedroom on the top level. Likewise, the single return register for the rooms on the middle level is in the living room wall under the upper level balcony. The return air intakes in the recreation room and offices on the lower level are at the floor level.

Typical Framing, Size Impose Restrictions

Because the house is large, with a basement and four distinct occupancy levels above it, the duct system is rather complex and extensive. It is further complicated by the usual split-level framing. Since the duct system is in the air conditioned basement and lower level, it is not insulated. (A very small portion of the duct system is in the crawl space under the dining room extension.)

There is a small ventilating exhaust fan in the lavatory in the office area on the lower level, another in the bathroom on the middle level and another in the kitchen, also on the middle level.

Outdoor Air Intake Used

A 12 × 5½ in. outdoor air supply duct is connected to the return air side of the unit. The entrance of the outdoor air intake is covered with a screened louver.

The heat gain was calculated according to NWAHACA Manual 11. The estimated heat gain for the residence portion of the house, excluding the dental offices, is 35,040 Btuh. The office area adds another 7170 Btuh, making a total of 42,210 Btuh for the entire building. This is equivalent to about 3.5 tons of cooling.

The distribution of heat gains from the several levels of the house are as follows:

Level	Btuh	Percent of entire house
Lower level, excluding offices	2090	5.0
Middle level	16,350	38.8
Upper level	11,960	28.2
Top level	4640	11.0
Office quarters	7170	17.0
Total	42,210	

The calculated heat loss of the entire structure is 125,500 Btuh, based on an outdoor design temperature of zero F. The ratio of heat loss to heat gain of the structure is 3.0.

Common Limitations Observed

No preliminary adjustments were made to the cooling equipment or the distribution system. Because of unfavorable weather for testing cooling system performance under design conditions, data obtained was insuf-

ficient to make a complete analysis of all performance factors. Considerable information was secured, however, on some apparently common limitations to cooling multi-level houses.

The averages of the temperatures at the different levels are of interest:

	Lower level	Middle level	Upper level	Top level
60 in. level temperature	75.5F	77.5F	78.6F	76.7F
Differential from ceiling to floor	1.8F	7.5F	3.5F	7.1F
Differential from 60 in. level to floor	1.1F	6.0F	2.6F	5.0F
Percent of air supply	—	38.9	40.8	20.3
Cfm air supply	—	185	198	272

The lower level rooms are coolest, even though no air was supplied to them, and the differential is smallest. The bedrooms on the upper and top levels are warmest, although the differentials in the bedrooms are less than those observed at the single station in the living room.

A special study of room air temperatures was made in the bedroom on the top level at about 3 p.m. During a 30 minute period the room air temperature at the 60 in. level varied from 76.8 to 80 F, a variation of 3.2 deg. Temperature measurements were taken with the entrance door open and with it closed. When the door was closed the temperature 3 in. above the floor level was 72 F; when it was opened the temperature at this level increased to 74 F in two minutes. The bedroom door opens directly to the head of the stairs leading to the upper level, at the foot of which is a return air intake.

Return Air Velocities Low

Return air velocities and calculated cfm appear low. The discrepancy between the measured flow rates of the supply air and return air is higher than usual. The flow rate of 1344 cfm is considered correct. If this value is correct, it corresponds to 448 cfm per ton of rated capacity.

The cooling equipment was obviously intended to cool the entire house, including the dental offices on the lower level. Excluding the heat gain of these offices, the distribution of the total air supply to the four levels of the house compared with the distribution of the total heat gain of the house is as shown in the following tabulation:

	Heat gain	Percent of total gain	Percent of total air supply
Lower level*	2,090 Btuh	6.0	0.0
Middle level	16,350 Btuh	46.6	38.9
Upper level	11,960 Btuh	34.1	40.8
Top level	4,640 Btuh	13.3	20.3
Total	35,040 Btuh		

*Excluding dental office suite

This tabulation indicates that 61.1 percent of the total air supply is to the upper and top bedroom levels, whereas the calculated heat gain for these two levels is only 47.4 percent. In order to maintain the bedrooms at the desired lower temperatures it would be necessary to supply 1) an even larger percentage of the total air supply, or 2) air at a lower temperature to these two levels.

However, when the entire house, including the office

space, is considered, the percentages shown in the following tabulation would exist.

	Heat Gain	Percent of total gain	Percent of total air supply
Lower level*	9,260 Btuh	22.0	0.0
Middle level	16,350 Btuh	38.8	38.9
Upper level	11,960 Btuh	28.2	40.8
Top level	4,640 Btuh	11.0	20.3

Total heat gain 42,210 Btuh

*Includes the heat gain of the lower level offices

With a total heat gain, including the offices, of 42,210 Btuh and a cooling unit rated at 3 tons or 36,000 Btuh, it is doubtful that the cooling installation would be adequate for the entire house at design outdoor temperature, and it is probable that the office section would be favored during occupancy hours. Opening of the damper in the supply duct of the office zone would undoubtedly increase the total air flow rate, but the total air flow rate to the bedroom levels would be likely to decrease and the temperatures on those levels would increase.

Complete Air Flow Study Isn't Possible

Because the damper in the zone duct supplying the dental offices was closed throughout the survey, there was no opportunity to study the air flow rates with all zone dampers open. While the damper of the middle level zone remained open almost continuously through the test, that of the upper level zone cycled occasionally and the effect on the air flow rate when only one damper was open could not be observed.

The middle level zone is largest, accounting for 20,990 Btuh, including the heat gain of the bedroom on the top level. The upper level zone supplying its bedrooms and two bathrooms accounted for 11,960 Btuh heat gain, not including the heat gain of the recreation room since those supply air registers were completely closed. The zone dampers, actuated by two-position motors, were either completely open or completely closed.

Total Outdoor Air Flow is 121 cfm

The amount of outdoor air taken into the system with both zones open was calculated at 121 cfm. This rate

was reduced to 109 cfm when only the middle level zone was open.

The air flow rate would probably be somewhat less if only the smaller upper level zone were open and considerably less if only the lower level zone were open.

When the supply air temperature at the plenum was 53 F one day, the air discharged from one supply air register in the top level bedroom was 55.9 F while from the west register in the living room the supply air temperature was 58.2 F. This is a temperature gain of 2.9 and 5.2 deg while the air was in transit between the cooling coil and supply outlet.

The house is occupied by a middle aged couple with one child less than 6 years old, one between 6 and 12 years and one over 12 years. All are in good health.

Occupants 'Not Entirely Satisfied'

The occupants' reactions to the cooling system are expressed in the following comments:

- 1) The cooling system was installed when the house was built because they wanted comfort the year around.
 - 2) They are not entirely satisfied with the installation because they believe the bedrooms are too warm.
 - 3) Since they expressed no comment on the cost of operation when asked, it is assumed it is satisfactory.
 - 4) They stated that an air conditioned house has changed some of their summer social and entertainment habits; for example, they do not go to the beach as much as previously.
 - 5) A thermostat setting of 74 F is preferred.
 - 6) The same setting is used day and night and remains unchanged throughout the year.
 - 7) The system is allowed to operate under thermostatic control 24 hours a day except during periods of cool weather when windows are opened.
 - 8) They have not experienced — nor have they any fear of — thermal shock when going in and out of the house.
 - 9) Cooking is not curtailed during hot weather.
- This article concludes the current series of four discussions of split-level cooling problems.

Don't Wire Air Conditioner To Room's Light Switch

IN A MISGUIDED attempt to cut the electricity consumption of window air conditioners, a resort hotel ran the power supply for each of the units through the room light switch. The theory was that as the occupant left the room, he would turn off the lights and thus automatically turn off the air conditioner. At night, the air conditioner could be left operating by turning off each lamp individually.

The hotel found out there are two things wrong with the scheme.

First, many occupants left the lights on when they went out of the rooms, in order that the cooling unit would run. Also, they turned the lights on when they didn't need them, in order to have cooling.

The second objection to the scheme was even more of a problem. On returning to his room, the occupant who had taken the trouble to turn off the lamps individually to leave the air conditioner running during his absence would flick the room light switch, stopping the cooling unit but not — of course — turning on the lights. The natural thing to do (we know, because we did it ourselves) is to flick the switch again. This starts the cooling unit before the pressure has had a chance to equalize, and the high head pressure results — more often than not — in blowing a fuse.

As soon as the maintenance man gets fed up with replacing blown fuses, the hotel faces a rather expensive rewiring job.

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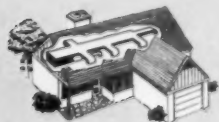
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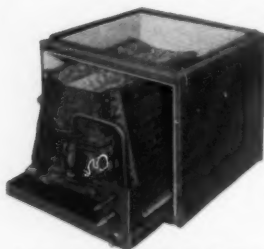
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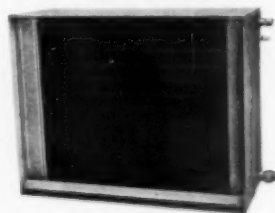
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**Idea Exchange
for
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Parts Basket Cuts Job Costs

JOB COSTS RISE sharply when mechanics must return to the shop for some forgotten component. To avoid this waste, Dave Gore, Home and Industrial Heating Co., Cleveland, has devised an oversize metal basket, mounted on 5 in. casters, in which are assembled all the fittings, ducts, controls, etc. needed for each job. When the order has been filled, the basket is stored at the loading dock.

The basket frame is made of $1 \times 1 \times \frac{1}{4}$ in. angle iron and is 4 ft wide by 2 ft deep. Baskets are 3 ft or 6 ft high. The sides of the baskets are heavy wire screen welded to the angle iron frame on all sides except the top halves of two sides of the tall basket. These sides are individually framed and hinged so they can be lowered when parts are being loaded or removed from the lower half of the basket. Long sections of duct work are laid across the tops of the baskets.

Engineer Makes Parts Order

When the equipment for a job is specified by the engineer, he prepares an equipment order which is sent to the shop. Each part, duct length, fitting, etc. is listed. The stock man moves the basket from storage bin to storage bin, selecting specified parts. When special sized fittings, duct sections or plenums are required, the shop mechanic is given the dimensions and told to prepare

the parts for the job. When all prefabricated parts have been placed in the basket, it is placed near the shop mechanic's work area where the special parts are being prepared. As each part is added to the basket, it is checked off the order.

The basket is not used for sheet metal fittings alone; all controls, diffusers, grilles, fasteners, drive cleats, humidifiers and other accessories are included in the job order.

Morning Confusion Eliminated

The usual morning confusion of getting together all the components for a job has been eliminated by this method of filling an order. The field men have little reason to converse with shop mechanics and both groups get to their daily assignments quicker. The shop mechanics find the basket not only keeps related parts together but also aids in good house-keeping practices. A noticeable reduction in damage to parts has been one of the major effects from using the baskets.



METAL BASKET holds all duct, fittings, controls, diffusers, hangers, etc. needed for each job. Components are selected in advance from engineer's equipment order

Field men find they don't have to be concerned about filling an order when the stock man is busy. Also, the correct size parts for the job are in the right order and once the job is started, it can be completed without running out of supplies.

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MODEL 250 — wired to operate
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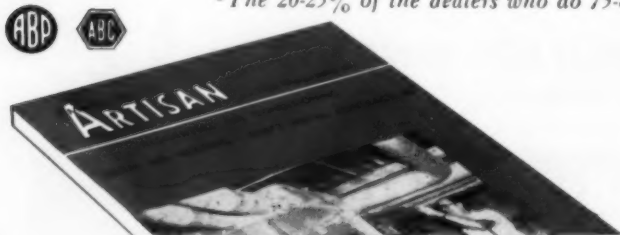
- 1** American Artisan readers have a prime prospect list in the millions of homes they previously equipped with warm air heating, the only type of heating readily adaptable to air conditioning.
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- 3** American Artisan Key Dealer readers have experience in all phases of air handling.
- 4** American Artisan subscribers have the ability to handle all planning, engineering, and installation work within their own organizations — have shop facilities and skilled personnel.
- 5** American Artisan readers have proved they know how to merchandise and sell equipment in this market.

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Quality work is standard when you use Microtex Duct Liner. You can see the black vinyl coating . . . tell right away it's properly coated to resist air erosion. You know ahead of time that it will stand up, even at peak operating velocities.

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• TOLEDO 1, OHIO

Contractor's Failure to Perform May Be Excused

Some courts have held that failure to perform according to contract may be excused when extreme hardship is imposed by conditions unforeseen when contract was made

AS A CONSEQUENCE of wartime controls and shortages some American courts have adopted a modification of the law governing liability for failure in the performance of contracts. However, this modification is still to be seasoned by time and general acceptance.

This rule was recently stated in detail by a court in one of the northwestern states. In that instance one of the parties contended that performance of a contract may be excused when circumstances, which were unknown at the time the contract was made, have rendered performance of the agreement impracticable by imposing on one of the parties an unreasonably burdensome hardship, loss or expense.

"This argument," said the court, "finds its basis in the relatively recent application of the defense of impossibility to those situations in which events, unforeseen at the time of contracting, produce an excessive hardship upon one of the parties which was not reasonably contemplated or expected at the time of the execution of the contract."

Define 'Impossibility'

To this was added an interesting definition by the court of the word "impossibility" as it has been used by the courts in this connection. It has long been the law that performance of a contract is excused when, after the contract has been made, performance is forbidden or made illegal by an act of the government, such as a new statute or wartime restrictions.

"Accordingly," continued the court in this instance, "impossibility" is not limited to a scientific or actual

impossibility of performance. Except where a contrary intent is manifest and except where the impossibility or impracticability of performance is wholly attributable to the fault of the party affected, performance of a contractual duty may be excused when, due to the existence of a fact or circumstance of which the party at the time of the making of the contract neither knew nor had reason to know, performance becomes impossible or becomes impracticable in the sense that performance would cast upon such party an excessive or unreasonably burdensome hardship, loss, expense or injury."

Rule Modified

To this statement of the rule was made the following modification: "A mere difficulty of performance does not ordinarily excuse a party, but where a great increase in expense or difficulty is caused by a circumstance not only unanticipated but inconsistent with the facts which the parties obviously assumed as likely to continue, the basic reason for excusing such person from liability may be present."

Only a few months after the court had outlined this principle, which was created to a great extent by World War II business conditions, an action came before a court in a Pacific Coast state to compel the performance of a contract under such circumstances. The court in this case held that the party was excused from its obligation to perform "because performance became impossible except at impractical, excessive and unreasonable expense not contemplated by the parties when the contract was made."

The court quoted an earlier decision: "A thing is impossible in legal contemplation when it is not practicable and a thing is impracticable when it can only be done at excessive and unreasonable cost. We do not mean to intimate that these contractors could excuse themselves by showing the existence of conditions which would make the performance of their obligation more expensive than they had anticipated or which would entail a loss upon them."

War Changed Conditions

Shortly after the end of the last war, suit was brought for damages for failure to fulfill a contract on which work had been previously ordered stopped by the refusal of the War Production Board to permit the use of critical material necessary for the war effort. Later when this restriction had been removed the expense of performance had been increased.

"While the mere fact that performance of a promise is made more difficult and expensive than the parties anticipated when the contract was made will not ordinarily excuse the performance, nevertheless there are decisions allowing an excuse where very greatly increased difficulty has been caused by facts not only unanticipated but inconsistent with the facts that the parties obviously assumed to exist or to be likely to continue," the court said.

"The true distinction is not between difficulty and impossibility. A man may contract to do what is impossible as well as what is difficult and be liable for failure to perform. The important question is whether an unanticipated circumstance has made performance of a promise vitally different from what should reasonably have been within the contemplation of the parties when they entered into the contract."

[Note: While this discussion applies to actual cases, it should be remembered that legal rules vary in different states.]

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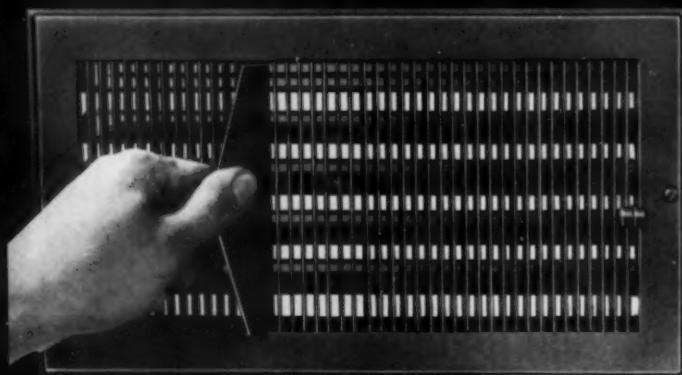
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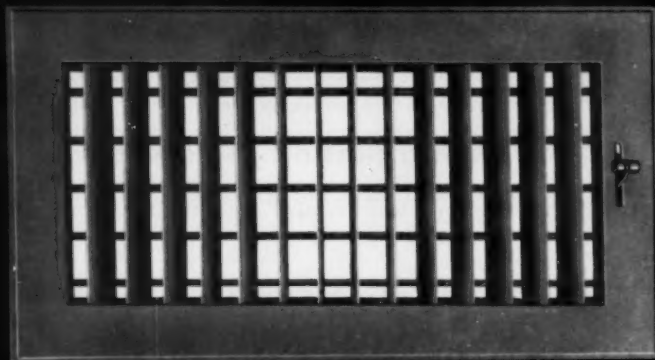


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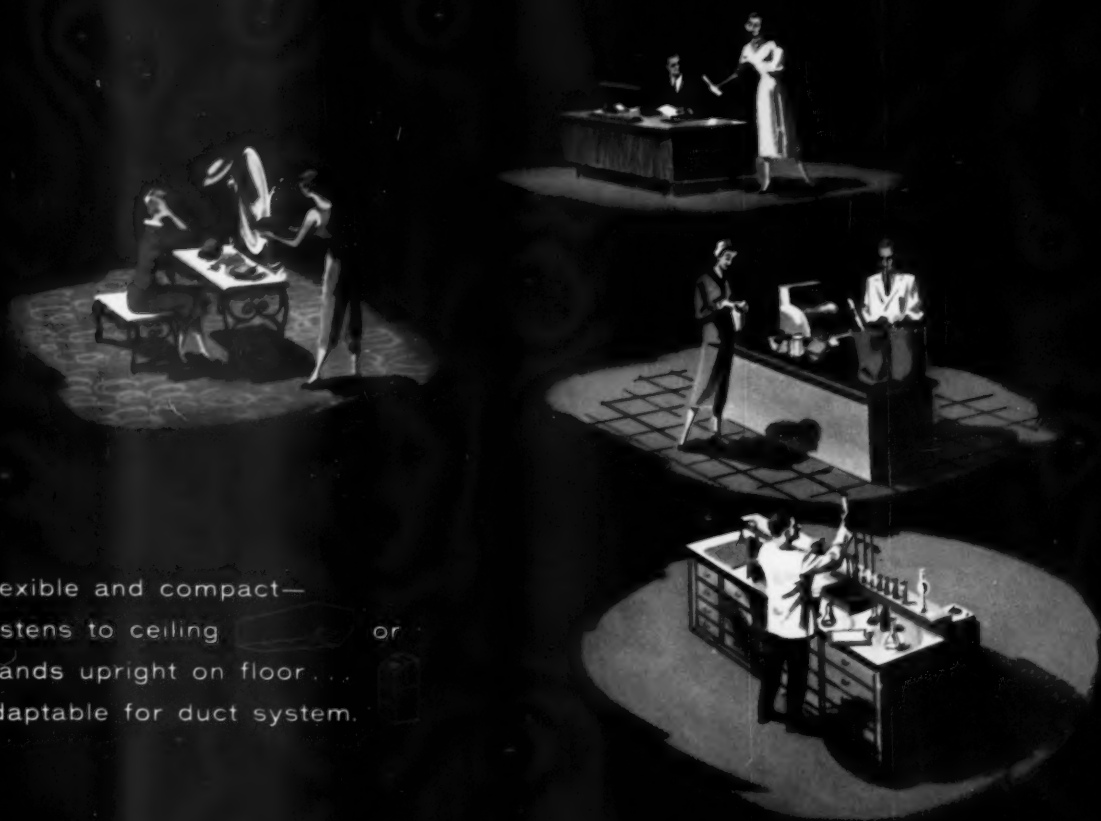
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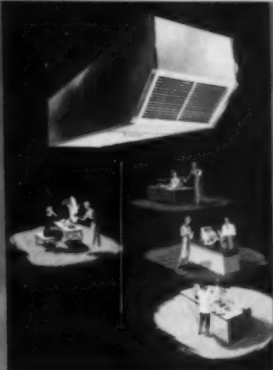
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*95° F. Dry Bulb air entering condenser, 80° F. Dry Bulb, 67° F. Wet Bulb air entering evaporator, approximately 400 CFM per 12,000 btu.

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Compact, smartly styled, easily adapted to existing space. Optional 2-stage operation with SAC-60 5 h.p. models. Two separate compressors are provided—a 2 h.p. and a 3 h.p. In mild weather, the 3 h.p. stage controls humidity without overcooling. The 2 h.p. stage turns on automatically when rising temperatures demand full cooling power. Controlled sequence starting. Capacities* 26,800, 36,900 and 63,700 btu.

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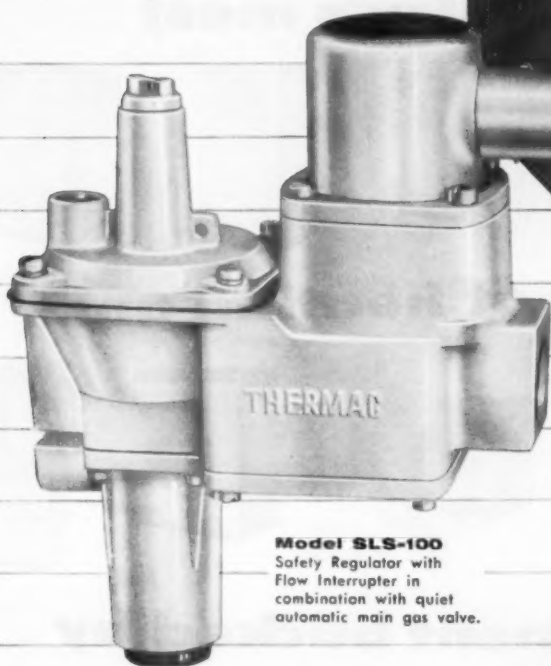
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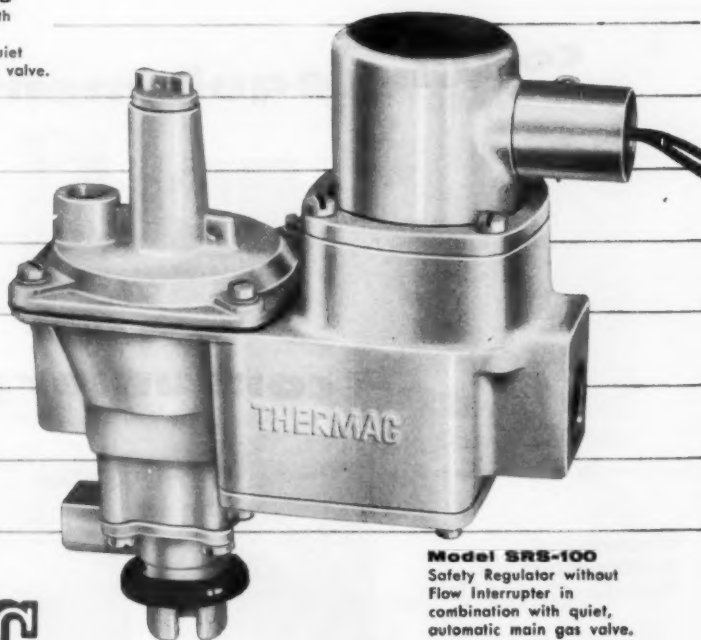
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Safety Regulator with
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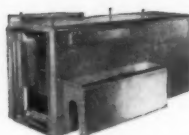
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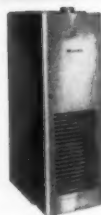
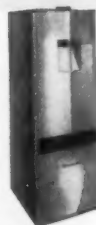
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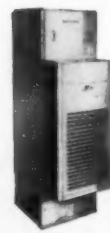
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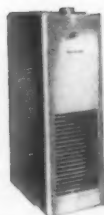
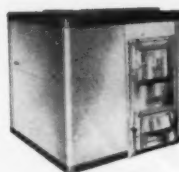


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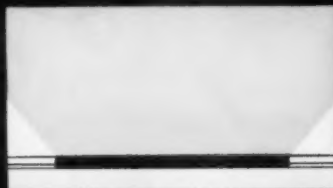
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WHAT THE ASSOCIATIONS ARE DOING



THE PROGRAM for the first summer convention of the NWAHACA was coordinated by (l to r) James F. Deane, general chairman, and associate chairmen Dar Knowles and James M. Martin



CERTIFIED heating program sponsored by SMACNA was outlined by Nat N. Leas (center), the sheet metal association's president, to Ray Hubbard (left) and Carl Artran at San Francisco meeting

Ways to Improve Industry Sought at San Francisco

All segments of the industry study paths toward solution of its pressing problems. Consumer education, sales promotion, and other topics provide basis for discussions

DEALERS, contractors, wholesalers, manufacturers and association representatives, seeking a way to develop a healthier business environment for the warm air heating and residential air conditioning industry, met in San Francisco June 5-7. The meeting was under the sponsorship of the National Warm Air Heating and Air Conditioning Association in cooperation with the Warm Air Heating Institute of Northern California, the Institute of Heating and Air Conditioning Industries of Southern California, and the Portland Warm Air Heating & Air

Conditioning Association. Attendance, totaling 421, represented all sections of the country.

Every aspect of the industry was explored to obtain answers which might show the way to better profits for all segments. No one solution was expected nor did one appear. However, many people carried away ideas that would lead to the solution of individual problems brought to the convention.

Opening the convention, Frank L. Meyer, president of NWAHACA, said, "The subject of comfort—be it heating comfort or cooling comfort—is of interest to all Americans. And, as suppliers of comfort systems, it is logical that we should consider the problems and opportunities of those of us in attendance here to be representative of the problems and opportunities of the entire industry. Our problems can be most easily solved by learning to work together toward a common goal."

Paths that could provide many of the answers needed

(Continued on page 94)



COMPARING notes on air conditioning problems are Charley Brooks (left) and Donald M. Keefer



PROBLEMS of temperature control are discussed by (l to r) R. W. Cleveland, Ed Hayes, F. L. Fowler



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All the how-to-do-it information you need to cash in on the tremendous profit potential waiting for stainless steel fabricators, is contained in these two Republic books. Both were written especially for sheet metal contractors.

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You'll find ENDURO is easy to fabricate on your present equipment. It's been "the sheet-metal-man's metal" for over a quarter of a century. ENDURO's ability to withstand the most severe service requirements makes it ideal for a host of uses from ductwork to diners, from siding to steeples.

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WITH THE ASSOCIATIONS

(Continued from page 91)



TEST CITY project was explained further by Frank J. Nunlist, Jr., (second from left) to (l to r) Emery Lillard, R. E. Williams and A. P. Fisher after close of a meeting at the summer convention



ACTIVITIES of Pacific Coast associations were told by their officers (l to r) M. E. Rutledge, Seattle; D. M. Keefer, Portland; Robert N. Hall, Los Angeles, and Dar Knowles, San Francisco

to solve industry problems were recommended by speakers and panels. In many cases these paths have already been explored, and the findings were illustrated through the use of case histories. Using the Test City Dealer case history as an example by which a dealer could increase his sales volume and profit margin, Frank J. Nunlist, Jr., executive vice president, Mueller Climatrol, Div. of Worthington Corp., showed that a planned sales promotion program could pay off for the dealer who studied his marketing area and who adjusted his sales promotion techniques to match the varying moods of the surrounding community.

Describes Sales Promotion Program

Following this recommendation with a budget plan for sales promotional activities, Clyde M. Barnes, editor, American Artisan, described the monthly expenditures of a midwestern dealer who has an annual sales volume of \$235,000 and who spends \$11,700 for sales promotion. The amount spent for sales promotion is equal to 5 percent of the annual sales volume, the cost being borne equally by the dealer and the manufacturer of the residential heating and cooling equipment. The media found most effective in the marketing area were spot radio announcements and daily newspapers. The quantity of advertising varied with the monthly interest of the public as shown by two charts developed by American Artisan. The percentage of money spent for sales promotion for each month was as follows: January, 1.25; February, 1.25; March, 7.5; April, 18.5; May, 12.5; June, 15; July, 13.5; August, 13; September, 9.5; October, 5.5; November, 1.25; and December, 1.25.

The recommendations for an aggressive dealer sales promotion program should be backed up with the highest quality installations through the use of a certified heating program according to Nat N. Leas, president, Sheet Metal and Air Conditioning Contractors' National Association. Mr. Leas described the SMACNA sponsored certified heating program and said, "A dealer must sell

his equipment, his reputation, his service, his personality as well as his price. Only a premium job can do credit to the installing dealer. Therefore, a certified heating system must be engineered to give maximum comfort and be backed up by association members who have posted a \$1000 bond to insure the accuracy of their work."

Booklet Aids Home Buyer

To provide prospective house buyers with a means of checking the heating system that has been already installed in a new or old house, James F. Deane, general manager, Tuck-Aire Furnace Co., and Dar Knowles, executive manager, Warm Air Heating Institute of Northern California, described a 20 page booklet prepared for this purpose. The booklet was made available by funds obtained from a sales promotion plan being conducted by the Northern California association. Money for this fund is obtained by a voluntary plan supported by all manufacturers or wholesalers supplying furnaces in the northern California area. They contribute \$1 per forced air furnace and 50 cents per floor furnace. This fund is being used to cover the costs of publishing the booklet described and to inform the public, through radio, newspaper and magazines, of the availability of information to help them select a system that will assure heating comfort.

Other associations conducting similar public information activities were represented by Robert N. Hall, president, Institute of Heating & Air Conditioning Industries of Southern California, and Donald M. Keefer, past president, Portland (Ore.) Warm Air Heating & Air Conditioning Association. These dealers reported that public interest in better heating systems was in proportion to the amount of promotional effort put into a program. Mr. Hall said, "An industry that is well organized is an industry that will make money. This is the primary objective of the Southern California association, and to carry out its aims we are flooding the newspapers with

(Continued on page 98)

it's money in your
pocket to . . .

✓✓double check

the "YEARS AHEAD"
features in

MONCRIEF Air Conditioning Units

✓✓THE Quality Construction

With Moncrief Air Conditioning Units, you receive the benefit of Moncrief's more than 60 years of experience in the manufacture of quality products. Moncrief Air Conditioners are rugged machines — built to out-perform and out-last other units which are less durable.

In addition, Moncrief Air Conditioners are designed to be easily serviced in the field — and their seldom need of service makes possible one of the air conditioning industry's most liberal Five Year Protection Plans!

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With either the Air Cooled or Water Cooled type of Moncrief Air Conditioner you can make a wide variety of installations with the same unit. The same 2, 3 or 5 Ton Air Cooled Condenser-Compressor Unit can be used with the Combination Year 'Round Air Conditioner, or in an add-on installation with any type of forced air furnace. The same popular 3 Ton Water Cooled Circuit is used with the combination Year 'Round Unit, or as an Add-On Cooling Unit.

This means fewer units for you to stock!

✓✓THE Competitive Pricing

Dynamic engineering, with advanced design that eliminates troublesome gadgets, makes it possible to price Moncrief Air Conditioning Units so that you can meet price competition with excellence.

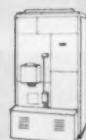
Your Moncrief Wholesaler will furnish you with the attractive catalogs and competitive low prices that will make it possible for you to secure profitable air conditioning business which you may have been missing. It's money in your pocket to call him, today!

AIR COOLED UNITS

5 Ton Moncrief Year 'Round Air Conditioning Unit is either Gas or Oil Fired



Counterflow Gas or Oil Fired, 2 or 3 Ton Moncrief Year 'Round Air Conditioning Unit



Gas or Oil Fired 2 or 3 Ton Moncrief Year 'Round Air Conditioning Unit

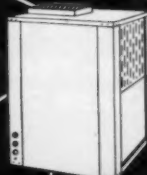
V-type Moncrief Cooling Coil installed with Winter Air Conditioning Furnace



The Furnace-Type Cooling Coil, which is installed inside the cabinet of the Moncrief Year 'Round Air Conditioner



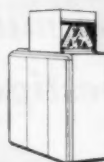
The V-type Cooling Coil, which is installed atop the air discharge opening of an Uplow-type furnace



The advanced Moncrief Air Cooled Condenser-Compressor Unit is installed equally well either out-of-doors or indoors



The Duct-type Cooling Coil, which is installed in the air discharge trunk line of a Horizontal or Counterflow Furnace



V-type Moncrief Cooling Coil installed with Basement Type Winter Air Conditioner



Duct-type Moncrief Cooling Coil installed with Counterflow Winter Air Conditioner



Duct-type Moncrief Cooling Coil installed with Horizontal Furnace

WATER COOLED UNITS



The excellent Moncrief 2, 3 or 5 Ton Water Cooled Refrigeration Circuit is charged with Freon and sealed at the factory . . .



This complete Cooling Circuit is installed within the cabinet of Combination Year 'Round Air Conditioner . . .



Or, is housed in its own cabinet for installation with a forced air furnace, as a 3 or 5 Ton Water Cooled Add-on Unit

It's MONCRIEF for the More Flexible COMPLETE LINE of Air and Water Cooled Air Conditioners

THE HENRY FURNACE COMPANY •

Medina, Ohio

HEATING AND AIR CONDITIONING UNITS

MONCRIEF
SINCE 1915

FURNACE PIPE AND FITTINGS

MicroRold® 430

the general utility STAINLESS STEEL

is approved for use by...



ARMY
QQ-S-766A
Class 7

AIR FORCE
Mil-S-854
Class 4

NAVY
QQ-S-0766b, Class FS-430
Mil-S-854, Class 4

*Since 430 meets military specifications,
why not investigate this grade for your product*

This straight chromium stainless grade possesses desirable qualities of beauty, corrosion resistance, strength, long life and low maintenance that are also of value in many civilian applications. More than 50% of all stainless applications could satisfactorily employ 430 stainless as an economical and practical material.

Type 430 stainless costs 10¾ cents per pound less than the 18-8 grade. Some of our customers are already saving more than \$215 per ton using our MicroRold 430 stainless sheet. Why not investigate the possibilities of this general utility 430 stainless.

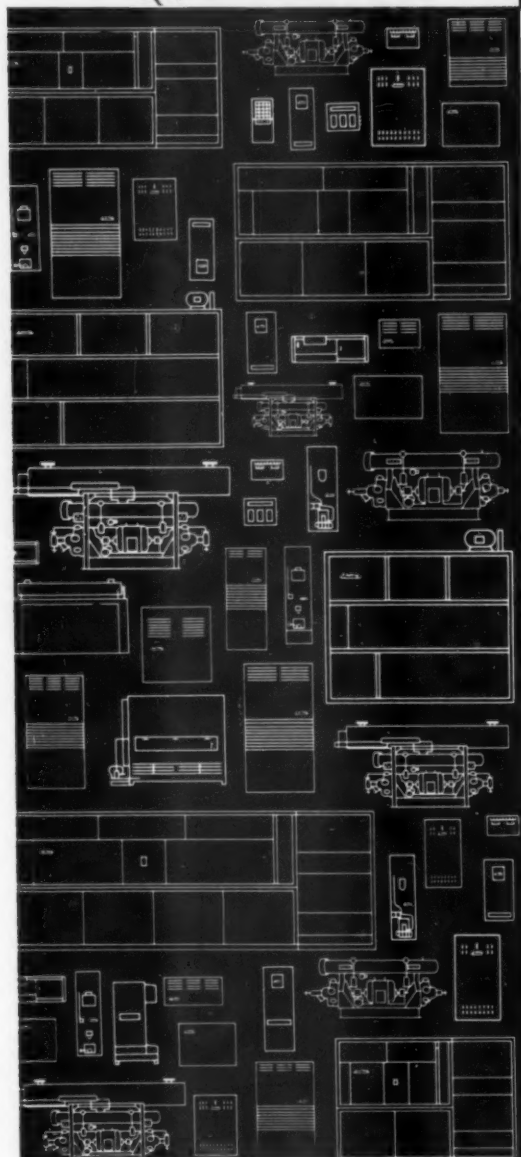
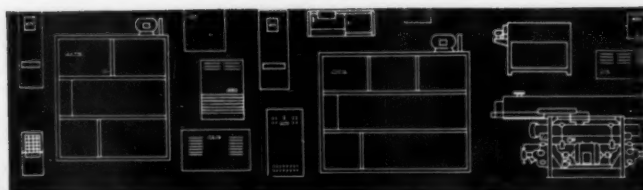
MicroRold 430 sheets are available up to 48" wide as thin as .010", and up to 36" wide as thin as .005" in commercial finishes and tempers.

Send today for your copy of our 24-page booklet,
"MicroRold 430 Stainless Steel Handbook."

Washington Steel Corporation

7-A Woodland Avenue, Washington, Pa.





AIRTEMP'S Furnaces..

SELL EASIER INSTALL EASIER

An Airtemp franchise boosts furnace sales for dealers because:

- Airtemp furnaces are Chrysler-engineered for quality and dependability.
- You get merchandising aids which are tested and effective.
- Your customers can add matched Airtemp cooling now or later.
- Products with a well-known and respected name—Chrysler's Airtemp—are easier to sell.

You get quick delivery and expert help from a *nearby* factory-trained Airtemp distributor. Airtemp furnaces are completely assembled and pre-tested.

HEATING AND AIR CONDITIONING
FOR A ROOM, A HOME, A BUSINESS,
AN AUTOMOBILE



For prompt information on Airtemp
franchise opportunities,
mail coupon at right.

AIRTEMP DIVISION, Chrysler Corporation
Dayton 1, Ohio

Gentlemen: Please rush full information on the
Airtemp franchise!

NAME _____

ADDRESS _____

CITY _____

ZONE _____ STATE _____

WITH THE ASSOCIATIONS

(Continued from page 94)



FROM THE MIDDLE WEST came Mrs. John Primich, Mrs. Ivar Anderson, Mr. Anderson (Chicago) and Mr. Primich (Gary, Ind.)



RELAXING BETWEEN meetings are (l to r) Stewart A. Bayne, Mrs. Bayne, Glenn A. Ashburn and Charles J. Pearson

news releases to show the public we are actively engaged in efforts to best serve them."

The use of publicity has proven very helpful to the Portland association. D. M. Keefer said, "We are rapidly altering the public's indifferent attitude toward heating systems, brought on by the use of low cost electric heating methods. Last year our association was able to obtain publicity in 20 Sunday supplements of the local newspaper. This required work on the part of our association members but it paid off for us individually and collectively."

Wholesaler Should Provide Training

The wholesaler's place in the overall industry picture and how he can help solve its problems was described by Glenn A. Ashburn, president, National Heating & Air-conditioning Wholesalers Association. Mr. Ashburn said, "The wholesaler who is interested in helping the dealer will conduct training programs designed to aid him in keeping abreast of current trends and procedures. Recently a number of wholesalers have jointly made available two-day schools in business management. If any dealer will follow the rules laid down in these classes, he will be assured of a fair profit and a good margin on which to operate his business."

The costs involved in the operation of a business were described by M. E. Sale, credit manager, Slakey Bros., Inc. Mr. Sale asked these questions: 1) What are the danger signs on the balance sheet? 2) How can a reasonable profit level be assured? 3) What is done with profit besides paying taxes? 4) How old are the accounts receivable? He recommended a thorough monthly study of the balance sheet and urged that quick action be taken whenever the answers to these four questions indicate an undesirable condition.

Consumer attitudes toward summer air conditioning were covered by Herbert T. Gilkey, technical secretary-research, NWAHACA, who said, "Many home owners

are currently exercising considerable manual selection of operating time on their air conditioning equipment. There is no real evidence that the usage variations are motivated by reasons of economy any more than reasons of personal preference." Mr. Gilkey added, "Owners of residential air conditioning practically never complain of operating costs. Analytical owners frequently find that their operating costs are offset by savings in other categories of expense."

Need for Zones Told

Another survey was reported on by C. W. Nessel, industry consultant, Minneapolis-Honeywell Regulator Co. Mr. Nessel said, "The actual construction of almost 2200 homes in 10 major areas of the country was evaluated. The results of this survey indicated that approximately 20 percent of the 1,000,000 new houses started in 1957 would require two or more thermostats to maintain minimum comfort conditions. This means that the dealers have an additional market for about 200,000 zoned air distribution systems and each of these jobs sold will mean one upgraded sale, which means more money in the till."

Additional opportunities for increases in the sales volumes of heating-cooling dealers were outlined by I. M. Remen, general manager, Pacific Div., Lennox Industries, Inc., who recommended that dealers develop a sales approach where "ideas" are sold to the consumer rather than the nuts and bolts story used in so many sales presentations. The best approach to the "idea" presentation is to play up the results to be achieved by purchasing the comfort system recommended.

The importance of a continuous educational program designed to produce more engineers and other technical manpower for the air conditioning industry was described by H. P. Hayes, dean of engineering, California State Polytechnic College, who said, "Talent plus educa-

(Continued on page 102)

SIMPLE AS A·B·C·

- A** COMPLETE LINE { FURNACES...
AIR CONDITIONERS
- B** CUSTOMER APPEAL & ACCEPTANCE
- C** QUALITY EQUIPMENT { REALISTICALLY
PRICED

**MOR-SUN
MEANS** →

**MORE
SALES**

**MORE
PROFITS**

FOR YOU



When you're a Mor-Sun Merchandiser, you can offer a furnace or air conditioner for every home heating or cooling requirement. Closing every sale is easier because the equipment spells "quality" in styling, engineering and construction. And, *most important*, the price is right... right for every customer, builder or home owner... right for you to make a healthy profit.

NEW MOR-SUN LO-BOYS FOR HIGHER SALES VOLUME
...another example of the "MORE" you get with MOR-SUN

4

MODELS

- ... gas and oil
- ... from 95,000 BTU/HR to 150,000 BTU/HR input for gas
- ... from 84,000 BTU/HR to 123,000 BTU/HR output for oil

**MODERN
STYLING**

- ... a sturdy, attractive cabinet
- ... finished in two-tone green
- ... new copper trim

**THERMO-DYNAMIC
HEAT EXCHANGER**

- ... for fastest heat transfer
- ... top operating efficiency and economy
- ... guaranteed in writing for 10 years

MOR-SUN OFFERS

you one of the soundest business opportunities open to heating distributors and dealers. It is backed by national advertising, a good co-operative advertising plan and sales promotional helps of all types. For all the details — call, wire or write.



Mor-Sun Division, MORRISON STEEL PRODUCTS, INC., 609 Amherst St., Buffalo 7, N. Y.

In Canada, Mor-Sun Limited, 62 Laurel St. East, Waterloo, Ontario.



You get so much more with
MOR-SUN

HEATING AND AIR CONDITIONING

PLUMBING, HEATING CONTRACTORS!

Booming business and dud prospects don't go together . . . knowing where the "live ones" are—that's what you need!



Write for a better way to make your profits go up

Advance information about new projects makes the difference between boom and bust when you do business with the construction industry. Dodge Reports not only give you early notice—they help you follow through by telling you whom to contact and when the job is out for bids (even who's bidding) on just the kind of work you want. If you'd like to know how to pin-point the "live" prospects that will help make your profits rise, just read and mail this coupon today.

TO: **DODGE REPORTS**, DEPT. 165, 119 WEST 40th STREET, NEW YORK 18, N. Y.

Yes! I'd like to pin-point my prospects by knowing in advance who's going to build, what, when, where.

I want to know whom to contact and when to submit bids.

I'd like to see some Dodge Reports, and I'd like a copy of your booklet that tells how to use this accurate, daily, up-to-the-minute construction news service.

I understand that I can pick just the area in the 37 Eastern States and the type of construction activity that interests me. Also, that I won't have to wade through mounds of data to find the information I need.

I'm interested in General Building ☐ House Construction ☐ Engineering (Heavy Construction) ☐

in the Following Area: _____

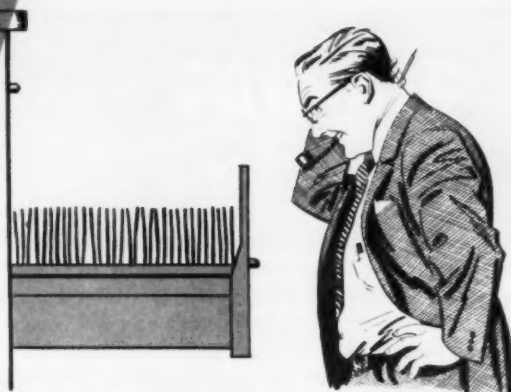
NAME _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____



You've got a
FILE-FULL
 of prospects for
 the full line of
Majestic Air Conditioning



Here's Your Market!

91%

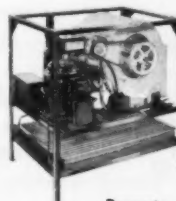
A 1956 survey made for DuPont shows that 91% of central air conditioning installations are made in homes that have *forced warm-air heating*. Your files are full of the names of people who have bought heating from you . . . people *already sold* on your ability to deliver *satisfaction*. You've got the names of many others whose furnaces you have serviced . . . people who buy filters, belts, and other items that put them into this 91% *best prospect list*.



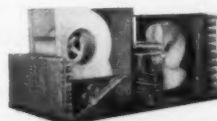
Evaporator cabinets



Self-contained water-cooled units



Remote air-cooled units



Self-contained air-cooled attic units

Here's Your Product!

97%

The same survey shows that Majestic air conditioning equipment will take care of 97% of installations *without modifications* . . . actually 100% as far as placement and type of equipment is concerned. Yes, 97% of central home air conditioning systems, presently installed, are in 2, 3, and 5 ton capacities — the sizes Majestic has concentrated on in establishing a *complete line* of water-cooled and air-cooled units, for basement, utility room, attic, garage, or outdoor installation.

WRITE
 for details on
 the complete line

The **Majestic** Co., Inc.
 394 Erie St., Huntington, Indiana

WITH THE ASSOCIATIONS

(Continued from page 98)

tion equals industry growth and opportunity. This equation can be put into action by close cooperation between schools and industry."

Panels Support Speakers

Three panels were part of the convention program. Each panel covered a separate subject and was designed to add support to information presented by individual speakers. Members of these panels were chosen to represent different sections of the Pacific Coast and other parts of the country. Contributing additional information on the subject of summer air conditioning was a seven man panel moderated by E. A. Myers, Jr., vice president, Prentiss Corp. Panel members were: S. F. Skafte, director of engineering, Utility Appliance Corp.; H. A. McIntosh, chief engineer, Controls Systems Div., General Controls Co.; E. E. Carroll, president, Kleenair Furnace Co.; Albert Freeman, Western Engineers, Inc.; Jack Ward, Edward B. Ward & Co.; and L. A. O'Meara, consulting engineer.

A second panel that contributed additional data on sales promotional activities was moderated by Randall A. Nelson, director of public relations, National Warm Air Heating and Air Conditioning Association. Members of this panel were: Charles Cashion, director of sales, Scott-Choate Publishing Co., Inc.; C. M. Barnes, editor, American Artisan; and T. W. Ohliger, promotion manager, Lane Publishing Co.

A third panel consisting of three dealers and three general contractors discussed mutual problems faced by heating and cooling dealers and new house builders. This panel was moderated by R. R. Taylor, application engineer, Fraser & Johnston Co. Members were: D. S. Will, Southland Heating and Air Conditioning Inc.; Harold Boothby, Boothby Sheet Metal; A. B. Briggs, Portland Sales & Service Co.; I. C. Jordan, Los Angeles; A. F. Oddstad, Redwood City; and Duke Newby, Portland.

Tucker Heads Florida Association

THE ELECTION of officers of the Roofing and Sheet Metal Contractors Association of Florida was held during the annual convention in Tampa. R. C. (Jack) Tucker was elected president. John A. Diaz, Sr., was named first vice president; Victor Kinsey, second vice president, and E. C. Goldman, third vice president. Mrs. Anne White was named secretary and John Starr, treasurer. Frank Tack is in charge of the publication of the monthly bulletin.

During the business meeting members heard a report on the association's self-insurance program. The report revealed that 49 members were participating.

Al Ferguson, chairman of the safety committee, reported that steps are being taken to provide a safety education program tailored especially for the industry. Other

reports were heard on a recent ruling by the Florida Supreme Court on the mechanic's lien law and on labor-management problems. B. L. Noblitt, executive secretary of the Georgia association, gave a report on the activities of his organization.

Norman Sandell, chairman of the ways and means committee, presented a report urging an increase in dues. A new dues schedule was passed providing for dues ranging from \$15 to \$90 based upon volume of business.

New Booklet Aids Home Buyer

A NEW BOOKLET, "House Heating Secrets," has been published by the Warm Air Heating Institute of Northern California to tell buyers "what to look for in judging any warm air system—what questions to ask—so you can buy comfort with confidence."

The 20 page booklet is greatly revised from a similar booklet issued last year. It is attractively illustrated and printed in three colors. The back cover features a check list of points to watch. Inside, the booklet explains what warm air heating is and what features a good system should have.

In order to assure wide circulation for the booklet the Institute has planned an extensive promotion campaign. The booklet will be offered to the public in magazine and newspaper ads and on radio spot announcements. In addition, the local gas utility will mention the availability of the booklet in its monthly bulletin which goes to 1½ million customers.

The cost of printing and promoting the booklet is part of the Institute's stamp plan budget.

Rochester Reelects Officers for Year

THE BOARD OF DIRECTORS of the Master Sheet Metal, Furnace and Roofers Association of Rochester, N. Y., reelected the following officers for the coming year: Fred Pike, president; Reggie MacLaughlin, vice president; Lester Wilson, treasurer; Richard W. Friday, executive secretary, and Fred Kimmel, assistant secretary. The association's June meeting was devoted to a stag golf party under the chairmanship of Orville Brandt.

Carolinas Hold Annual Meeting

MYRTLE BEACH, S. C., was the site of the 14th annual convention of the Carolinas Roofing and Sheet Metal Contractors and Suppliers Association, June 13-16. Among the guest speakers were Martin Coffee, Philip Carey Co.; Calvin Bowman, president, National Roofing Contractors Association; and C. P. Street, McDevitt and Street Co. A feature of the meeting was a cost forum under the chairmanship of J. M. McKeithan. Taking part in the forum were J. Roy Martin, Jr., and Bill Arthur, Jr.

(Continued on page 106)

ASK YOUR JOBBER ABOUT THE IMPROVED

**THREE
SIZES**

FAN-AIR[®] **BASEBOARD DIFFUSERS**

With the Built-In Full-Length Balancing Damper

*Regulated with lever; avoids need of adjustment in pipe.
Also without damper.*

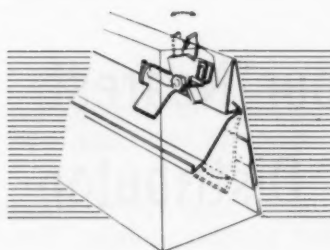
and the Instantly Adjustable Boot Opening

Easy to position in center of room; adequate slot for joists.

Recommended For Heating and Cooling



Observe how air is spread sideways and upwards in a fan-shaped pattern, forming a blanket of warm or cool air on the outside wall and window. Built-in damper forms a reservoir which helps spread hot or cool air along the entire length of the diffuser.



Made of 20 gauge steel, diffusers are sturdy and dent-resistant; easily installed and positioned; smartly styled and finished in a neutral prime coat; attractively inconspicuous in the room. Small lever with set-screw adjustment regulates full-length damper.



FAN-AIR[®]
COMPANY

DOWAGIAC MICHIGAN

INTRODUCTORY OFFER

FAN-AIR COMPANY, Dowagiac, Michigan

Free! Heddon spinning rod or casting rod given with Special Introductory Offer. Sign your name and name of your jobber on coupon and mail for details of FREE offer.

Your Name _____

Address _____

City _____ Zone _____ State _____

Name of Jobber _____

Address _____



NEED STAINLESS STEEL NOW?

Call Your Nearest Armco Distributor

When you need stainless steel *quickly*, it pays to know your nearby Armco Distributor. Because he can generally meet your needs directly from stock, delivery time is usually just a matter of hours.

Distributors of Armco Stainless Steels also provide many other valuable services. For example, most distributors have facilities to slit or shear stainless to the size you require, speeding your fabrication operations. Distributors are ready to help you select grades and provide fabricating information, too.

Look over this list of independent Armco Stainless Steel Distributors. There's a good chance that a warehouse is located near you. A phone call is all that's needed to speed your order on its way.

Distributors of Armco Stainless Steel

Key: (A) Sheet, Strip, Plate;

(B) Bar and Wire

ARIZONA

PHOENIX
Ducommun Metals & Supply Co. (B)

CALIFORNIA

BERKELEY
Ducommun Metals & Supply Co. (B)
EMERYVILLE
Electric Steel Foundry Co. (AB)
LOS ANGELES
The Cold Metal Products Co.
of California (AB)
Ducommun Metals & Supply Co. (B)
Electric Steel Foundry Co. (AB)
NATIONAL CITY
Ducommun Metals & Supply Co. (B)

COLORADO

DENVER
C. A. Crosta, Inc. (A)
Metal Goods Corp. (AB)

CONNECTICUT

HARTFORD
The American Steel & Aluminum
Corporation (AB)
Peter A. Frasse & Co., Inc. (AB)

FLORIDA

JACKSONVILLE
J. M. Tull Metal & Supply Co. (AB)
MIAMI
J. M. Tull Metal & Supply Co. (AB)
TAMPA
J. M. Tull Metal & Supply Co. (AB)

GEORGIA

ATLANTA
J. M. Tull Metal & Supply Co. (AB)

ILLINOIS

CHICAGO
Central Steel & Wire Co. (AB)
Chicago Steel Service Co. (B)

KANSAS

WICHITA
Metal Goods Corp. (AB)

LOUISIANA

NEW ORLEANS
Metal Goods Corp. (AB)
The Orleans Steel Prod. Co., Inc. (A)

MAINE

AUBURN
Brown-Wales Company (AB)

MARYLAND

BALTIMORE
Seaboard Steel & Iron Corp. (B)

MASSACHUSETTS

CAMBRIDGE
Brown-Wales Company (AB)
Industrial Stainless Steels, Inc. (B)
FALL RIVER
Congdon & Carpenter Co. (AB)

MICHIGAN

DETROIT
Central Steel & Wire Co. (AB)

MISSOURI

KANSAS CITY
Richards & Conover Steel Div. (A)
NORTH KANSAS CITY
Metal Goods Corp. (AB)
ST. LOUIS
Metal Goods Corp. (AB)
E. E. Souther Iron Co. (A)

NEBRASKA

OMAHA
Gate City Steel, Inc. (A)

NEW YORK

BUFFALO
Peter A. Frasse & Co., Inc. (AB)
SYRACUSE
Peter A. Frasse & Co., Inc. (AB)

METROPOLITAN NEW YORK

NEW YORK CITY
Peter A. Frasse & Co., Inc. (AB)
HILLSIDE, N. J.
Edgcomb Steel & Aluminum
Corp. (AB)
LYNDHURST, N. J.
Peter A. Frasse & Co., Inc. (AB)
UNION, N. J.
Mapes & Sprowl Steel Co. (AB)

NORTH CAROLINA

CHARLOTTE
Edgcomb Steel Co. (AB)

OHIO

CINCINNATI
Central Steel & Wire Co. (AB)
CLEVELAND
Cleveland Tool & Supply Co. (B)
Viking Steel Co. (AB)
COLUMBUS
Vorys Brothers, Inc. (AB)

OKLAHOMA

TULSA
Metal Goods Corp. (AB)

OREGON

PORTLAND
Electric Steel Foundry Co. (AB)

PENNSYLVANIA

PHILADELPHIA
Edgcomb Steel Co. (AB)
Peter A. Frasse & Co., Inc. (AB)
YORK
Edgcomb Steel Co. (AB)
York Corrugating Co. (A)

RHODE ISLAND

PROVIDENCE
Congdon & Carpenter Co. (AB)

TENNESSEE

MEMPHIS
Metal Goods Corp. (AB)

TEXAS

DALLAS
Metal Goods Corp. (AB)
Moncrief-Lenoir Mfg. Co. (AB)
FORT WORTH
Maxwell Steel Co. (A)

HARLINGEN

Moncrief-Lenoir Mfg. Co. (AB)

HOUSTON

Metal Goods Corp. (AB)
Moncrief-Lenoir Mfg. Co. (AB)

LUBBOCK

Moncrief-Lenoir Mfg. Co. (AB)

SAN ANTONIO

Moncrief-Lenoir Mfg. Co. (AB)

TEMPLE

Moncrief-Lenoir Mfg. Co. (AB)

WASHINGTON, D. C.

York Corrugating Co. (A)

WISCONSIN

MILWAUKEE
Central Steel & Wire Co. (AB)

DOMINION OF CANADA

MONTREAL, QUEBEC
Firth-Brown Steels, Ltd. (AB)
TORONTO, ONTARIO
Firth-Brown Steels, Ltd. (AB)
VANCOUVER, B. C.
Esco, Ltd. (AB)

ARMCO STEEL CORPORATION

1577 Curtis Street, Middletown, Ohio

Sheffield Steel Division, Armco Drainage & Metal Products, Inc., The Armco International Corporation

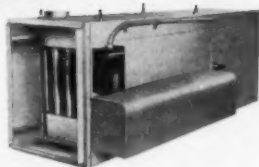




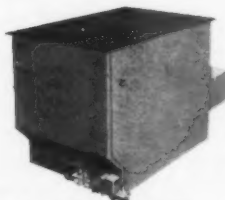
The **COZY** LINE WINS APPROVAL EVERY TIME!



Compact UP-FLOW AND COUNTER-FLOW COZY FORCED-AIR MODELS give zero clearance; let you use 4" piping or conventional ductwork. Has exclusive Heat Wringer Heat Exchanger. Adaptable for air conditioning. 75,000, 105,000, 140,000 BTU input capacities.



COZY HORIZONTAL FORCED-AIR MODELS available in five capacities: 60,000 BTU to 140,000 BTU input. This space- and money-saver can be installed in attic, utility room, under floor... even without basement.



The COZY CHALLENGER, the best buy in floor furnaces, has four capacities: 35,000, 50,000, 65,000, and 75,000 BTU.

COZY WALL HEATERS, available in four capacities, single- or dual-wall installations; three different temperature controls are available. AGA approved under 1957 central heating standards.



If you're backing a loser, it's time to take a look at the high-quality COZY line of gas-fired furnaces.

First of all, with COZY you can handle 90 per cent of all home and small building heating installations.

And COZY is the profit-building line that assures maximum profit because they are easy to sell, easy to install, and easy to maintain.

So, if you're missing sales and profit, get the facts on COZY and the year around high-profit sales plan.

Write today for complete information. No obligation.

THE ADVANCE FURNACE CO.
WICHITA KANSAS

COZY



PENCILS AND NOTEBOOKS were in wide use at dealer management conferences where discussion groups met to talk over specific industry problems

OHI Convention Offers Guides To Progress and Profits

A CONVENTION designed to aid all segments of the fuel oil burning industry in achieving faster growth and better profits was held in Boston, June 3-6, by the Oil-Heat Institute. Nearly 850 dealers, wholesalers and manufacturers were on hand for the 35th annual meeting of OHI. The Biennial Eastern Exposition of Oil Heat and Domestic Cooling was held during the same week.

A new feature of this year's convention was the first symposium of OHI's technical division where seven papers on various industry subjects were presented. W. T. Knox, Esso Research and Engineering Co., was chairman of the program.

In a paper on Heating Oil Quality, R. P. Gilmartin, Gulf Oil Corp., pointed out that today's heating oils are quite different from those available immediately following World War II. "The oil industry has constantly strived to produce more efficient fuels," he said, "and one of the results has been the widespread use of the catalytic cracking process. Even though No. 2 heating oils containing cat-cracked fuel components have been distributed for the past nine years or so, there still appears to be some need for further information on these products."

"It has been determined," he continued, "that in order to establish the same combustion performance with a cat-cracked fuel having a higher carbon-hydrogen ratio than a straight-run, it is necessary that more air be provided

by increasing the air inlet opening. The amount of increase of air inlet opening may vary from 15 percent to 200 percent, depending upon the characteristic air delivery curve of the burner blower or fan."

Reports on Oil-Fired Cooling

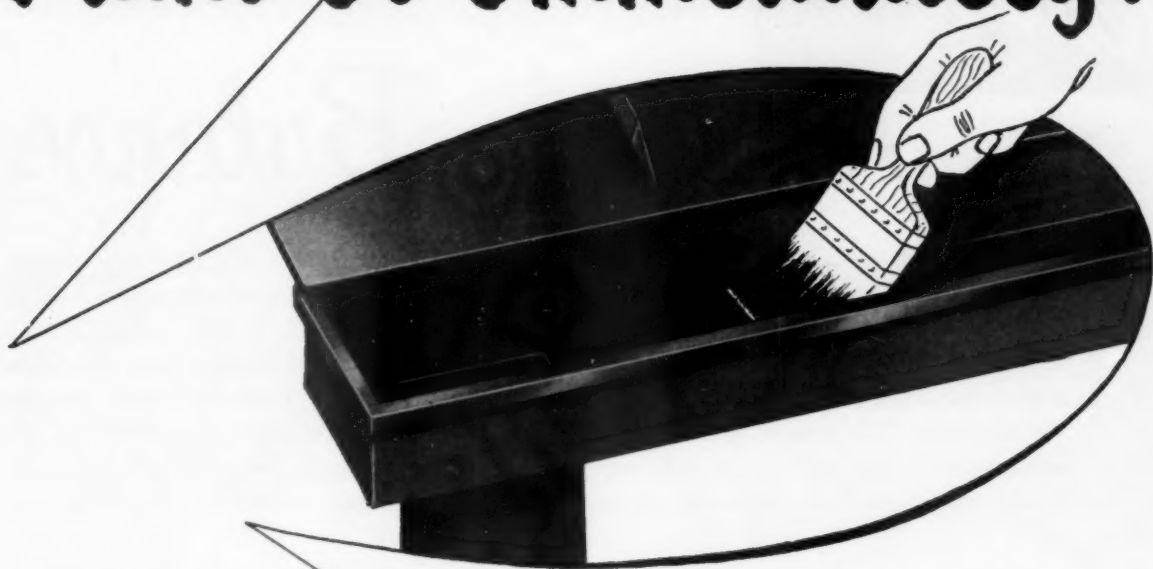
R. W. Sage, Esso Research and Engineering Co., reported on efforts by his company in cooperation with other manufacturers to develop oil-fired air conditioning. He pointed out that several independent surveys indicate that the market for central air conditioning in homes will reach 500,000 units by 1960, and 1,100,000 units by 1965.

He described the new heat-actuated absorption cooling unit which is now in production. He also discussed experiments with a diesel driven heat pump and a pressurized heat-actuated refrigeration system. He noted that his company is willing to work with any manufacturer in research and study of the problem.

Experiments with a unique oil-fired cooling system were told by David H. Bottrill, technical secretary of OHI. This unit would use a new glass-product adsorption material to dry the air to about 5 percent humidity. Air is then cooled by passing through an evaporative cooler. The adsorbent is dried with an oil-burner for recycling.

(Continued on page 110)

Paint It* Immediately!



Follansbee Terne* Needs No Special Treatment!

Follansbee Terne offers the wonderful advantage that it can (and should) be painted immediately after installation. Unlike many other metals, it does not need to weather or be given any special treatment before it can make a perfect bond with the paint—a bond that will last.

You'll find too that Follansbee Terne offers many other advantages as a complete roofing material; and for gutters, downspouts, valley,

flashing and weathersealing as well. Terne is far more ductile, Terne is easiest to solder and expansion joints are unnecessary. Most importantly, Terne has proof of its long life and serviceability.

When you sell and install Follansbee Terne, you're assuring yourself a better profit. You're

also giving your builder customers a *lifetime, quality* job that will please his customers too.

Follansbee Terne is carried in stock by leading sheet metal distributors everywhere



FOLLANSBEE

STEEL CORPORATION

FOLLANSBEE, WEST VIRGINIA

Terne Roofing • Cold Rolled Strip • Polished Blue Sheets and Coils
Sales Offices in Principal Cities

Tecumseh

engineering

VISION

assures perfect Balance

With Tecumseh, an exactly balanced system is not just a possibility . . . it's absolutely assured! Tecumseh customers benefit by the fact that Tecumseh manufactures more compressors — both in total as well as in individual models — than anyone else in the world. This means that to begin with, you can match one of these many standard models very closely to your system requirements. Added to this is the tremendous backlog of experience Tecumseh has gained in working with over 500 customers. This permits Tecumseh engineers working with the customer to determine quickly and accurately what variations may be necessary in either the compressor model itself, or possibly in your system, which would provide the perfect balance so necessary to efficient unit performance.

PERFECT BALANCE IS ACHIEVED THROUGH CLOSE ATTENTION TO DETAILS. Balanced air flow over the motor compressor for lower operating temperatures, better performance. Balance of the capillary tube for correct refrigerant flow. Balance in evaporator passages for minimum effective refrigerant charge. Balance of condenser to compressor, and evaporator to unit capacity. Balance of cabinet heat leak to unit capacity thru good insulation, door seals, vapor barriers . . . These are all primary considerations in the proper balancing of a system. Tecumseh goes beyond them. For instance, Tecumseh assists the customer to design and apply an overload exactly suited to each application so he will get the best compressor performance possible. This allows fewer nuisance "trips," yet provides adequate protection to meet any real failure danger inherent in the specific application.



Tecumseh customers know that they are being served in their own best interests beyond the point of sale. Continuing efforts are made in Tecumseh engineering facilities to improve model efficiencies and to analyze application problems. And in the event that help is requested in the field, you'll find a Tecumseh engineer available to check out applications — whether they apply to compressor, system, installation, or maintenance — and to recommend procedures. Bring your problem to Tecumseh. You'll find that Tecumseh ENGINEERING VISION is the best means to your end product.



The Leader Serving Leaders In The Air Conditioning And

TECUMSEH PRODUCTS

EXPORT DEPT. — P.O. Box 2280, 24530 Michigan Ave.,

between compressor and system

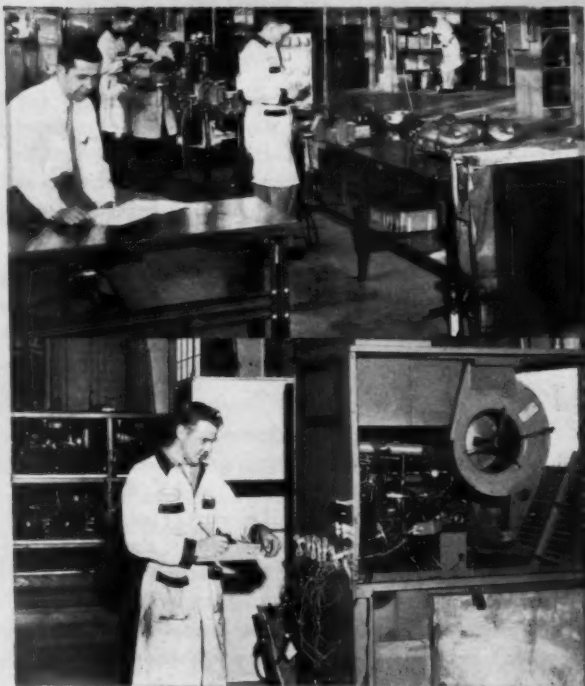


SAMPLES—The prototype of the required compressor is built to the exact design specifications. At this time internal variations may be tried to determine whether or not they will lend themselves to our high speed production methods.

TESTING—The sample model is placed under exhaustive tests in Tecumseh's completely equipped laboratory. Samples are also sent to the customer so that they may be tried in his lab on his equipment. In this way the compressor proves itself — right or wrong.

APPLICATION—The specific application dictates the proper relationship of the major components. When we know that the compressor is right, we can work with the customer to coordinate the compressor with the final application.

DESIGN—Compressor performance must begin with the basic design. This may be an entirely new concept or an adaptation of a basic design to the needs of a particular customer. Tecumseh designs have proven performance, may be built in large volume for maximum economy, and are flexible enough to incorporate minor changes required on the customers' applications.



Refrigeration Industries

COMPANY

West Dearborn, Michigan

MARION, OHIO

TECUMSEH, MICHIGAN

WITH THE ASSOCIATIONS

(Continued from page 106)



BALLROOM was partitioned into separate rooms where dealer conferences could meet to discuss subjects which interested them



CREDIT and collections conference, led by K. G. McKay, was popular with dealers and some had to stand while listening

The unit can be switched to heating for use in winter months.

Although Mr. Bottrill admitted that the system requires further refinement, he cited as potential advantages the fact that no outside condenser is needed and water consumption is only 1.5 gallons per hour for each ton of cooling. The system would also provide convenient switching from heating to cooling and vice versa and would permit close humidity control in both summer and winter.

The present status of the research program on pulsations in oil-fired furnaces was the subject of a paper by A. A. Putnam, assistant division chief, Battelle Memorial Institute. This program has been underway since 1954. The results to date, he said, have developed considerable information on the nature of pulsations and how they are produced. The program at present is being devoted to an evaluation of suggested cures and details of their use.

Tells How to Improve Service

"Efficiency and high quality service can only be obtained by close and careful supervision, adequate training, and sympathetic management," said T. R. Loizeaux, Jr., service manager, T. R. Loizeaux Fuel Co., in a paper on oil burner service. He described the results his company experienced in trying to convert service from a "necessary evil" to an efficient selling tool.

"Upon completion of the installation of a new oil burner, we have a system of three inspections," he said. "The first is between three and ten days after completion of the installation. The inspector checks the following items: completion of all work, neatness, use of proper methods and materials, compliance with local ordinances, proper adjustment of flame, proper setting and functioning of controls, combustion efficiency, and explanation of operation to customer.

The second inspection comes after six months and the

third after one year. In these later inspections special emphasis is given to combustion efficiency. "I believe," Mr. Loizeaux said, "that an inspection system such as this is necessary for continual control of quality and to give the home owner the protection, confidence, and satisfaction he deserves with such a large investment."

He also described other procedures used by his company to reduce the number of service calls and to increase the efficiency of service operations.

Dealers Choose Conference Subjects

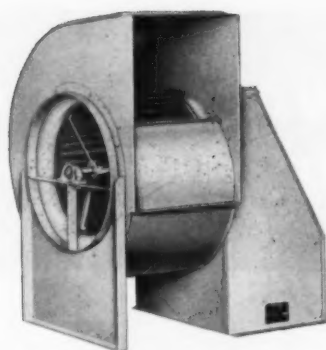
Another feature of the convention was the Round Table Dealer Management Conferences held on two days. The hotel ballroom was partitioned into separate rooms where different subjects were discussed under supervision of a leader. Dealers were able to select subjects of their own choosing and were given the chance to move from one discussion group to another.

The 66 subjects covered included several on sales, service, management, public relations and other topics of practical value to a dealer.

At the manufacturer's conference held during the convention, a new plan for improving the industry was presented. The plan proposes the establishment of minimum standards of safety and performance for products and their installation. Compliance with the standards would result in the issuance of a label to be affixed to the equipment and the installation. An advertising and promotion program would be conducted to help develop consumer acceptance of the label. Those in attendance at the conference were nearly unanimous in their approval of the plan, although details of its operation came in for considerable discussion.

Officers elected during the convention were J. V. Resek, Cleaver-Brooks Co., president; and G. M. Marin, Sun-Ray Burner Manufacturing Co.; Stanley Czarnecki, Eddington Metal Specialty Co.; and J. Hollis B. Albert, Oil-Heat Association of Maryland, all vice presidents.

(Continued on page 114)



**DOWN
TO**



ON A BUY IN THE SKY

Let's face it: isn't it time something was done about "the forgotten fan?" Tucked away on the roof — but not out of harm's way — it takes a grueling beating from wind and the weather. If maintenance isn't up to snuff, it frequently breaks down from exposure and lubrication neglect.

Utility has the practical, down to earth solution: a complete series of Enclosed Drive Blowers designed for outdoor service, all with completely enclosed motors and drive to protect them against dirt, moisture and drastic temperature changes. Lubricated for life with permanently sealed, pre-greased ball bearings, they'll never break down from lack of proper maintenance.

This achievement in creative engineering is one more excellent reason to recommend Utility Enclosed Drive Blowers to meet every specification, be in line on every bid. Next job, plan with Utility to keep costs down while delivering the absolute maximum of outdoor service!

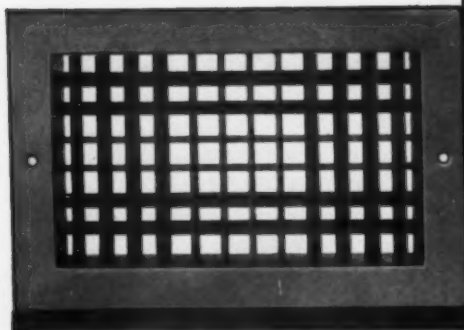
UTILITY FAN CORP. 911 East 59th Street, Los Angeles 1, California



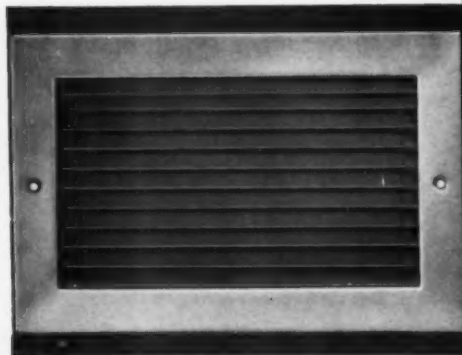
Manufacturers of heavy and standard duty blowers for heating, air conditioning and ventilating installations. Producers of blowers and blower parts for original equipment manufacturers. Write for catalogue data.

A Division of Utility Appliance Corp.

What makes WATERLOO the buy-word in grilles?



Style 2V Supply Grille
Two sets of adjustable louvers,
front vertical, rear horizontal.



Style 3H Return Air Grille
One set of horizontal fins fixed down at 45°
deflection... Also available in 0° deflection.



Write for Catalog,
containing complete data
on all Waterloo air
diffusion equipment.

55 YEARS' EXPERIENCE

Since 1902, the Waterloo Register Company has been a leader in the development of registers and grilles for air conditioning, heating and ventilating applications. This 55 years of experience helps us make the finest equipment available today.

EXCLUSIVE DESIGN

Waterloo registers and grilles feature the silent flow "tear drop" louvre design, which allows a streamlined flow of high-velocity air, maintaining the required throw at the most efficient level.

QUALITY CONTROL

Every Waterloo register and grille is manufactured in a modern plant using the most efficient manufacturing techniques. There is rigid inspection at every vital step.

WIDE RANGE LINE

Whatever your specific needs, you will find the unit you want in Waterloo's complete line of supply and return registers and grilles. We also manufacture quality volume control dampers and door ventilators.

FAST SERVICE

Waterloo delivers . . . when you need it! Specials can be turned out in a hurry to meet job requirements.

These are *five* good reasons why it pays to make Waterloo your *buy-word*.

WATERLOO

REGISTER CO., INC.

WATERLOO, IOWA

REGISTERS • GRILLES • VOLUME CONTROL DAMPERS • DOOR VENTILATORS

Here's Why You'll Enjoy Selling This All-New Century Gas Series

COSTS LESS!

These deluxe automatic furnaces cost less than many open-cabinet, stripped down units. Their clean, functional design eliminates costly, unnecessary bulk. This all-new series has not only been tested but proven during 5½ years of development and home use. It's the most complete, competitively priced gas heating line on the market today!

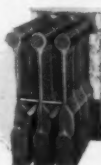


Basement model shown with matching return air cabinet.

QUIET, ECONOMICAL OPERATION



Front View



Back View

Edge welded heat exchanger is not solidly tied down to jacket but floats on Fiberglass gaskets to eliminate expansion and contraction noises. Carries free 10 year warranty. The properly baffled air stream provides even temperature distribution. Fiberglass insulation keeps heat loss at a minimum... aluminum foil facing reflects heat inward.

WIDE RANGE OF SIZES... AND COOLING, TOO!

Your choice of basement, utility and counterflow models from 80,000 through 160,000 BTU input. A. G. A. approved for natural, manufactured and mixed gases. Motors and blowers are oversized to assure smooth operation under cooling loads. Matching integrated summer cooling systems are available.



Utility model.
Filter racks either side or bottom.

EASY INSTALLATION AND SERVICE



Counter flow with panels removed.
Filters can be changed without removing stack.

This slim, rigid furnace is fully enclosed. Draft diverter and factory-tested controls are built-in. Pilot and thermo-couple are bolted in correct position. Burner holds efficient, short blue flame indefinitely. Only the front panels need to be lifted out for servicing all components.

YOUR CUSTOMERS CAN COUNT ON CENTURY FOR COMFORT!

Every Century heating or cooling system is tested under typical operating conditions in Century's modern laboratories. You can be sure each will do the job for which it is rated.

HEATING (Gas or Oil)

Horizontals
Lo-Boys
Hi-Boys
Counterflows
Conversions

COOLING

2, 3 and 5 H.P.
Remote Systems
2 and 3 H.P. Store Cooler
2 and 3½ H.P. Attic-Type
"Coolpak"

Remember, Century backs you with national advertising, local "Co-op" and field sales assistance.

Century

CEDAR RAPIDS, IOWA

ENGINEERING CORPORATION
CEDAR RAPIDS, IOWA 210-D

Please send me information on the complete line

Company.....

Attention.....

Address.....

WITH THE ASSOCIATIONS

(Continued from page 110)



PROBLEMS of operating a service department are reviewed by T. R. Loizeaux, Jr., (second from right) after he presented paper on this subject



REGISTRATION desk for the Biennial Eastern Exposition of Oil Heat was kept busy as dealers flocked to view 123 exhibits

Elected to the executive committee were Paul K. Adams, Fitzgibbons Boiler Co.; Fred Heaney, New York Oil Heating Association; R. F. Hertel, General Electric Co.; G. E. Hochstein, The Heil Co.; F. M. Jordan, Timken Silent Automatic Div., Scaife Co.; C. W. Lang, Sundstrand Machine Tool Co.; T. R. Loizeaux, Union County Fuel Oil Dealers Assn.; Robert Lucas, Toridheet Div., Cleveland Steel Products Corp., and L. D. Sibley, Electronics Corp. of America.

Awards Presented for Service

The annual OHI luncheon saw numerous awards made to industry leaders. Igniter Awards for outstanding service in marketing went to B. L. Ray, Esso Standard Oil Co.; T. R. Loizeaux, Sr., T. R. Loizeaux Fuel Co.; C. Everett Elliott, Charles L. Elliott Co.; William K. Kenny, Meenan Oil Co., Inc.; Douglas W. Smith, Standard Oil Company of California, and F. J. Schuster, Troy Oil Co.

Aladdin Lamps, OHI's highest award, were presented to P. G. Crewe, Webster Electric Co.; G. M. Marin, Sun-Ray Burner Manufacturing Co., and Fred Heaney, Skaggs-Walsh, Inc.

In appreciation of his services to OHI, a special presentation of a clock was made to George E. Hochstein, who retired as OHI president after serving two terms in office. Since Mr. Hochstein was unable to attend, the award was accepted for him by J. V. Resek, newly elected president of OHI.

Minneapolis Hears Talk on Sales

THE MAY MEETING of the Air Conditioning and Heating, Roofing and Sheet Metal Association of Minneapolis featured a talk by Hal Chamberlain, Minneapolis-Honeywell Regulator Co. He told dealers that they should build up a package of quality and then sell it. He cited the auto industry as an example of how extras could be sold—power steering, power brakes, power windows, etc. The

same condition could exist in the heating business, he said. Dealers should sell such extras as air purification, additional controls and cooling. By thus building up the sales package, he declared, it can be made more interesting for the customer.

SMACNA Acts on Dealer Division

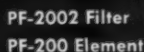
THE BOARD OF DIRECTORS of the Sheet Metal and Air Conditioning Contractors National Association met following the annual convention to consider action on a proposed separate division to be established within the National Association for warm air heating dealers.

During the convention the Council of Chapter Representatives submitted the following resolution to the board: "Resolved, that a separate division be established within SMACNA to handle the problems, administratively and publicity-wise, of the warm air contractors and that the door be opened for local associations of warm air heating and air conditioning contractors as chapters of this association, subject to the constitution and by-laws of this association." This resolution was thoroughly discussed during the Indoor Comfort Conference at the convention. At the conclusion of the conference, those attending voted to approve the resolution of the Council and endorse its consideration by the board of directors.

At the meeting of the board, the directors restated their previous expression of willingness to consider such a separate division. However, the board reminded the industry that SMACNA's door has been opened to local chapters of warm air heating dealers providing there is no conflict with existing chapters and the existing chapter does not validly object. The board also invited inquiries from warm air heating dealers who may be interested in forming such local chapters.

The board also requested that the staff of the association prepare a list of the services which SMACNA now has available for warm air dealers and those which it

(Continued on page 118)



CROSS REFERENCE CHART

[illegible]

PUROLATOR REFILL FEATURES . . . 0.005 MICRON FILTRATION • ONE SIZE FOR ANY CAPACITY • U.S. APPROVED 100 G.P.H. • FIVE TIMES MORE FILTERING SURFACE AREA

This handy guide shows you, instantly, the filter refills which may be used, interchangeably, in all leading filter units.

Filtration For Every Known Fluid

PUROLATOR

PRODUCTS, INC.

Rahway, New Jersey and Toronto, Ontario, Canada

Reduce your inventory problems...

**THESE 4 PUROLATOR REFILLS
SERVICE 98% OF ALL
OIL BURNER FILTER INSTALLATIONS**

With the addition of three new sizes, the famous PurOlator line of Micronic® filter refills (including gaskets) will now fit 98% of all oil burner installations.

In addition to supplying most requests from a minimum stock of four sizes, you can give your customers the five outstanding benefits of PurOlator Micronic filtration — *no matter what filter is installed on their job.*

1. Water and acid resistant element.
2. Uniform density filtering to .0005".
3. No channeling or "soft" spots.
4. Will not shrink, distort, stretch, flake or deteriorate.
5. A guaranteed filtering capacity of over 100 gallons per hour U.I. approved.

MAIL COUPON FOR FREE CROSS-REFERENCE CHART-

Dept. OB5-730 Purolator Products Co., Inc.
Rahway, New Jersey

Please send me _____ copies of your Oil Burner Filter Element Cross-Reference Chart.

Name _____

Address _____

City _____ Zone _____ State _____



COMBINATION PATTERN
No. U412, 12" only.

SNIPS FOR EVERY SERVICE



HEAVY DUTY PATTERN
No. U416, 16" only.



CIRCULAR CUTTING PATTERN
No. T412, 12" & T47, 7".

STANDARD PATTERN, No. S410
Seven other sizes, 7" to 14".



AVIATION SNIPS, No. V19R
Right Hand, Cuts to left.

AVIATION SNIPS, V19L
Left hand, cuts to right.



NEOPRENE INSULATING SLEEVES
Available for all Aviation Snips. Here shown
on No. V19S, straight cut.

Crescent Tinners' Snips are forged of selected steel and blades ground on special grinding machines. They are hardened by Crescent's own selective induction process to insure long, satisfactory service. These easy-cutting, well-balanced snips are made in four patterns; standard, circular cutting, combination and heavy duty.

Sold by hardware dealers and industrial distributors everywhere.

AVIATION SNIPS. Keenly ground, hard, tough alloy steel blades with machine serrations...can be factory reground. Compound leverage produces tremendous shearing power. Three patterns.

CRESCENT TOOLS

Give Wings to Work

*Sign of the Artisan
Symbol of Excellence*



Crescent is our trade-mark, registered in the United States and abroad, for wrenches and other tools. Sold by leading distributors and retailers everywhere and made only by
CRESCENT TOOL COMPANY, JAMESTOWN, NEW YORK



Standing ready to serve you!

Your local steel distributor plays a vital role in your production picture. He supplies that all-important material—steel—in any amount, size, or shape, from his well-stocked warehouse. And he delivers immediately upon demand!

Whether you need a small quantity of steel to wind up a job without going back to the mill—or a medium-size quantity to supplement your present supply—your distributor is capable and instantly ready to fill any need.

He's truly "at home" with your problem, regardless of its size.

Your local warehouse distributor is indeed the strongest link between the mill and you—an indispensable supply source. And he's never any farther away than your telephone.

Call him for any quantity of Weirkote zinc-coated sheets—Weirzin electrolytic zinc-coated sheets—or hot or cold rolled sheets. You'll be surprised at the scope of the services he offers you . . . courteously and punctually.



**WEIRTON STEEL
COMPANY**

WEIRTON, WEST VIRGINIA

a division of

NATIONAL STEEL CORPORATION



WITH THE ASSOCIATIONS

(Continued from page 114)



WINNERS John Nimeth (left) and Mel Jackson compare prizes awarded at first Chicago Warm Air Golf Association outing.



KEEPING SCORE was everybody's job in this four-some (l to r) George Anderson, Frank Schroeder, Charley Bennett and Len Miller.

can provide in the future. This program will then be submitted to the programs and activities committee to determine conflicts, if any, and to analyze the financial needs and staff requirements. The committee will also consider the possibilities for a program of consumer education which could be supported by cooperative effort of the various industry associations.

Students Demonstrate Cooling

NEARLY 15,000 visitors to the annual Poly Royal celebration of the California State Polytechnic College received a practical lesson in air conditioning from a unique three room display built by air conditioning students.

The Institute of Heating and Air Conditioning Industries reported that each of the three rooms was built and equipped to furnish a completely different body comfort reaction. The first dramatized heat transfer by convection by having a blast of cold air from the diffuser send chills down the visitors' backs while the thermostat maintained a comfortable reading.

The second illustrated the effects of radiation by having visitors almost perspire from the heat before a panel of photoflood lights, also with the room thermostat at 76.

The third room illustrated proper air conditioning, a balanced system which made the occupants comfortable in any part of the room.

First Chicago Golf Meet Held

THE FIRST 1957 outing of the Chicago Warm Air Golf Association was held May 23 at the River Forest Country Club. This has been an annual event since the association was formed in 1937. The association holds three such meetings each year, with a silver loving cup awarded to the member turning in the two lowest net scores. Prizes were awarded to players in the order of

their low net scores, which were figured on the Peori system using gross scores and a calculated handicap.

Prize winners in the order of their scores were:

Mel Jackson—Wolverine Tube Div., Calumet and Hecla, Inc.

John Nimeth—Robinson Furnace Co.

Charles R. Bennett—Armstrong Heating Supply Co.

Al Stella—Standard Oil Co.

Chas. E. Price—American Artisan

Jerry Anderson—Anderson Heating Co.

Babe Frick—Robinson Furnace Co.

Walter Aschliman—Condensation Engineering Co.

Al Verbeek—Verbeek Heating Co.

Len Miller—Austin Sheet Metal Works

Howard Nelson—Robinson Furnace Co.

George Anderson—Condensation Engineering Co.

Ivar Anderson—Anderson Heating Co.

John Reock—American Artisan

Otto Zeman—Barney Olson, Inc.

Frank Schroeder—Austin Sheet Metal Works

Blind Bogey winners were Charles R. Bennett and John Reock.

Western Exhibit Attended by 7286

THE PRODUCTS of 176 manufacturers were displayed at the Western Air Conditioning, Heating, Ventilating and Refrigeration Exhibit and Conference held in Los Angeles in May. A total of 7286 persons registered during the five-day show. Two technical sessions were held in conjunction with the exhibit. According to a survey made by Fred J. Tabery, exhibit manager, 85 percent of the exhibitors taking part expressed interest in future shows of this type. As a result President Arthur J. Hess and the board of directors of the Western Air Conditioning Industries Association are considering dates and plans for a similar event in 1958.

(Continued on page 122)



Beautiful Answer to 101 Overhead Heating Jobs

Norman Three-Sixty®

FORCED CONVECTION OVERHEAD GAS HEATER

You'll like the way prospects like the ultra-modern Norman Three-Sixty, and you'll appreciate its exclusive features that give you such a profitable edge on competition.

Here's how the Norman Three-Sixty assures constant air circulation without stratification. An intake fan draws air from the floor up into the bottom of the unit where the air is heated and distributed outward and slightly downward in a full 360° radius to form an umbrella of comfortable warmth.

* Sealed Combustion System

* Exclusive Electric Ignition

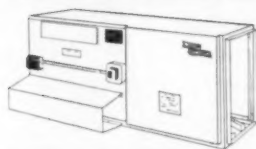
* Forced Exhaust

* 100% Outside Air For Combustion

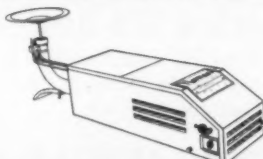
The exclusive sealed combustion system with electric ignition lets you install the Three-Sixty where ordinary unit heaters can't go. The system also permits efficient and economical installation in multi-story buildings.

Find out why the Norman Three-Sixty offers you so much more in opportunity for increased sales and profits.

Send the coupon today for literature and details.



**Norman Southern
Horizontal Gas
Furnace**



**Norman Conversion Burners
Available with capacities
from 50,000 to 2,000,000 BTU/h.**

NORMAN PRODUCTS CO.
1164 Chesapeake Ave., Columbus 12, Ohio

Rush literature and details on the Norman Three-Sixty Forced Convection Overhead Gas Heater and other quality Norman gas-fired heating equipment.

NAME _____ TITLE _____

FIRM NAME _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

new clean-sweep styling and modern power features open the way to new production peaks

ALL
NEW



NIAGARA

**30 AND 50 TON
PRESS BRAKES***

HERE'S MEANINGFUL STREAMLINING . . . and at its very best! *Everything's inboard:* Motor, belts, flywheel, clutch, brake and gears . . . yes, even the connections, pitmans and ram adjustment mechanism. *Nothing protrudes!*

Resourceful designing has made it possible to provide heavier, deeper uprights with relatively no increase in floor space. Net result: **A 50% deeper throat for larger work.**

HERE'S PERFORMANCE that can't be matched! These all-new Niagara Press Brakes have a smoothness of action all their own. Niagara Power Features . . . Power Clutch, Power Brake, Power Treadle . . . assure easy, instant response to every command. The ram can be micro-jogged smoothly and softly to a layout line, or stopped on a dime at full speed!

Proved on mighty Niagara Presses, Niagara's Electro-Pneumatic Friction Clutch engages in a fraction of a second, disengages even faster, and *fails safe!* Featuring simplified construction, it's a low inertia, heavy duty unit that's designed to outperform and outlast any other press brake clutch. Friction plates automatically compensate for wear . . . no adjustment required.

Spring applied, Niagara's powerful Air Releasing Brake can't fail for it does not depend on energy (air or electricity) to bring the machine to an immediate halt.

HERE'S RUGGEDNESS to take extreme loads in stride! Niagara's solid, all-welded steel one-piece frame with integral wrap-around crown provides maximum resistance to deflection. *There's nothing to work loose!* Utmost strength and rigidity are assured.

Straddle mounted between anti-friction bearings, hardened steel gears run in a sealed oil bath. Centralized pressure lubrication delivers oil to all main bearings, connection bearings and gibs with a single shot.

PREVIEW THESE ULTRA-NEW MACHINES

Find out what they can do for you by writing for Niagara's new, illustrated Bulletin 90 today.



NIAGARA MACHINE & TOOL WORKS • BUFFALO 11, N. Y.

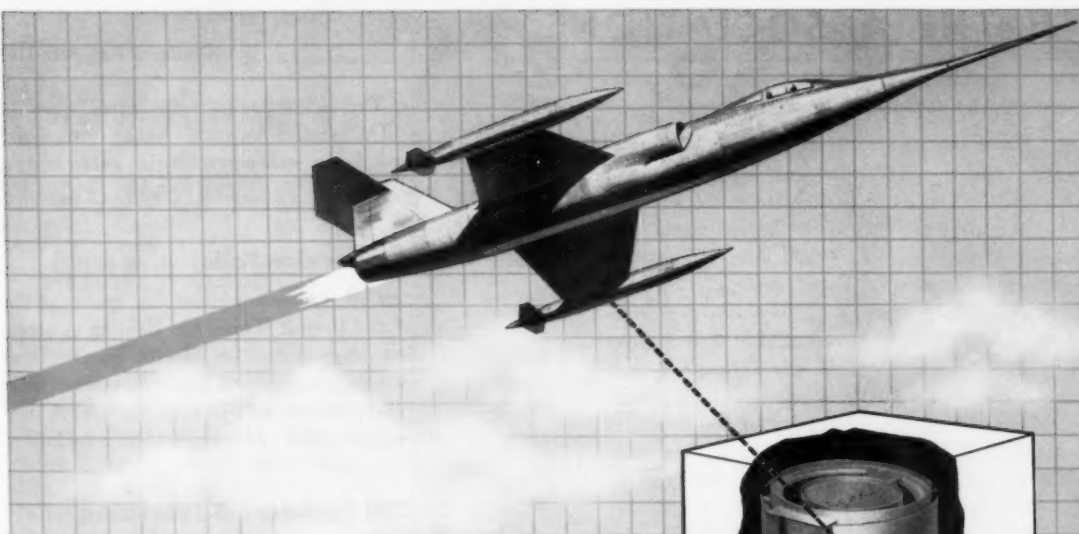
DISTRICT OFFICES

Boston • Buffalo • Cleveland • Detroit • Indianapolis • New York • Philadelphia

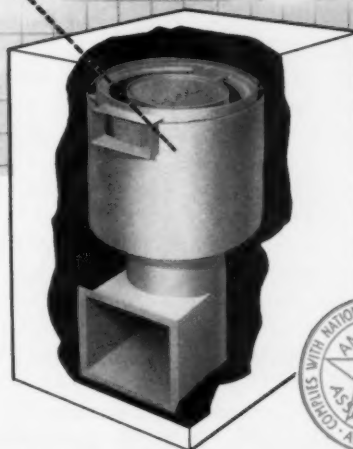
Distributors in principal U. S. cities and major foreign countries

America's most complete line of presses, press brakes, shears, other machines and tools for plate and sheet metal work

*Patented & Patents Pending



MADE LIKE A JET...AND MOVES AS FAST!



Only TEMCO gas central heating equipment features heat exchangers finished in Ceramic-Clad®... a high-temperature porcelain enamel finish similar to that used for the combustion chambers of jet engines.

TEMCO's Ceramic-Clad heat exchangers are built to withstand temperatures far higher than any heating unit will ever reach... they never burn out and never rust out (the American Gas Association approves Ceramic-Clad at 225 degrees higher than plain steel!)

*Trademark Registered

That's why TEMCO heat exchangers are warranted in writing for 20 years!

Ceramic-Clad heat exchangers are featured in TEMCO Lo-Boys, Hi-Boys, Gravity Furnaces, and Counter-Flow Furnaces. Air conditioning units available for forced-air equipment. Ceramic-Clad heat exchanger eliminates danger of corrosion from condensation that always accompanies summer cooling.

... just one of the many reasons why TEMCO central heating equipment sales are jet-propelled!

TEMCO, inc.

NASHVILLE 9, TENNESSEE

"Gas Heating Specialists for the Nation"

"THE COMPLETE LINE OF GAS HEATING EQUIPMENT"

ROOM HEATERS • FLOOR FURNACES • WALL HEATERS • UNIT HEATERS
WARM AIR FURNACES AND AIR CONDITIONING

TEMCO, Inc., Dept. C-198
Nashville 9, Tenn.

Please send me the full story on TEMCO's exclusive Ceramic-Clad process and the complete line of TEMCO Automatic Gas Warm Air Furnaces.

Name

Firm Name

Address

City Zone State

Homemaker to Address Institute

IN ORDER TO GET the point of view of the end user of home heating and cooling equipment, a representative homemaker will be invited to participate in the First Institute on Environmental Control to be sponsored next fall by the Institute of Heating and Air Conditioning Industries in Los Angeles. The homemaker will be selected by a panel of home economics directors from Los Angeles newspapers. The homemaker will address the meeting on "The Needs of Family Living."

The tentative program for the Institute, which will be held on the campus of the University of California at Los Angeles, will be keynoted by L. M. K. Boelter, dean of UCLA's school of engineering, who will discuss "Man's Effort to Control His Environment." The two-day meeting will close with a panel discussion of "The Indoor Climate of the Future." General chairman of the Institute is Leo Hungerford, past president of both IHACI and the Southern California chapter of the American Society of Heating and Air Conditioning Engineers.

Opening day topics will include: Climatology of the Southwest Region, Man's Influence on Air Composition, Application of Meteorological and Geographical Data to Design Criteria, Human Requirements for the Ideal Indoor Climate, Indoor Climate Design for Family Living, and Medical Significance of Air Contamination.

Second day discussions, under the chairmanship of Dean Harold P. Hayes, school of engineering, California Polytechnic College, will cover: The Role of Building Design in Environmental Control, The Role of Mechanical Equipment for Heating, Cooling, Air Purification and Controls, and the Contribution of Environmental Control to the Economy.

Kalamazoo Considers Ethics Code

THE JUNE MEETING of the Kalamazoo Sheet Metal, Roofing, Heating and Air Conditioning Contractors' Association considered the adoption of a Code of Ethics for the association. A committee had prepared the code and members were invited to comment on it. Speaker for the evening was C. C. Whitcomb, president and general manager, Kalamazoo Furnace and Manufacturing Co., who presented a new sound film, "Tell Your Sales Story Convincingly."

Illinois Association Issues Bulletin

AS A SERVICE for its members the Sheet Metal Contractors Association of Illinois has begun publication of a monthly bulletin, to keep them posted on activities of the state organization. The June issue of the bulletin featured efforts by the association to defeat two bills under consideration in the state legislature. One bill would impose a tax of 2.5 percent upon the gross receipts

of a contractor. The bill apparently would not apply to subcontractors. The second measure would complicate the method used by a subcontractor in perfecting a mechanics lien.

Detroit Hears Service Talk

ROBERT HUNDLEY of William Steinen Co. spoke at the June meeting of the Detroit Warm Air Heating Association. His subject was combustion, drafts, nozzles, and pumps and related service problems. Members were asked to invite their service men to hear the talk. A new roster of members has been published by the association.

Wisconsin OHI Sponsors Advertising

ANOTHER IN A SERIES of newspaper supplements devoted to oil heating was developed by the Oil-Heat Institute of Wisconsin. The special 16 page, two color section appeared in the Milwaukee Sentinel in April. The supplement contained considerable editorial matter and a large volume of related advertising. This chapter has sponsored these supplements periodically through the years. Laverne Schaetzel is president of the state organization and Harold Mottram is secretary.

Kansas City Honors Apprentices

APPRENTICES COMPLETING their training were honored at a banquet in Kansas City. Nearly 260 people were present. Don Murphy of the bureau of apprenticeship, Department of Labor, presented certificates of completion to 13 men who were graduated from the apprentice program. Lee Bowen welcomed the men into the union. Dave Todd served as master of ceremonies.

Guenther Elected President at Denver

CLARENCE GUENTHER, Air Way Heating Co., was recently installed as president of the Sheet Metal and Warm Air Heating Contractors Association of Denver. Mr. Guenther replaces outgoing president John Cipra, Cipra Air Conditioning and Sheet Metal Co. Other newly elected officers are: O. C. Kinney, vice president; Philip Fox, secretary, and James R. Woodward, treasurer.

AMCA Issues New Fan Bulletin

METHODS for calculating fan performance from prototype test data and methods of prototype fan testing are described in a new bulletin issued by the Air Moving and Conditioning Association.

Copies are available free upon request from AMCA, 2159 Guardian Building, Detroit 26, Mich. Ask for Bulletin 151.

(More association news on page 124)

Why Bethcon is the sheet-metal man's sheet

There is, of course, a very sound reason for Bethcon's growing preference among sheet metal men. *Two* reasons, in fact, which are fast establishing Bethcon as *the* sheet to work with, *the* sheet to sell.

First is the fact that Bethcon is neither too soft nor too hard; it's just right for easy workability in the shop and structural rigidity in the finished product.

Second is the fact that Bethcon's zinc coating is the stubbornest coating you ever saw. Even when a Bethcon sheet is doubled back on itself, its galvanized coating does not peel or flake off.

Bethlehem's continuous galvanizing process provides the answer to both these points of superiority. This process includes a special annealing cycle which imparts to the basic steel the strength-with-ductility that makes the sheet so desirable. Seconds later, the zinc is applied, and applied so *tightly* that it permits forming never before considered practical for galvanized steel.

You really ought to try Bethcon for yourself in order to appreciate its true advantages. It is available in gages 13 and lighter, with either plain open hearth or copper-bearing (Beth-Cu-Loy) steel for the base metal. A Bethlehem representative will gladly work with you in running some tests. Just get in touch with the Bethlehem office nearest you.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation



BETHLEHEM STEEL



WITH THE ASSOCIATIONS

(Continued from page 122)



DIRECTORS and officers of the IHACI in Los Angeles at June meeting were: (seated, l to r) Robert Johnson, Stanley Skafte, R. E. Harkens, Robert Hall, J. W. Burke, Gordon Payne, Kenneth Robertson, Glenn Ashburn; (standing, l to r) Edward Meyers, Jr., Frank Spratt, Joseph Staller, William Kell, Edward Sales, Joe Alvin

IHACI Hears Two Speakers

TWO SPEAKERS made up the program for the June 13 meeting of the Institute of Heating and Air Conditioning Industries in Los Angeles. James Cayton, president, Vertical Blinds Corp., talked about "Big Problems of the Small Businessman" and Clyde M. Barnes, editor, American Artisan, about "How Dealers Are Beating the Price Squeeze."

If the retail businessman knows the basic fundamentals of calculating overhead costs, he will have a better chance of escaping the fate of nine out of every 10 people who start small businesses. Mr. Cayton said that only one business in 10 is still in operation after 10 years because most retail merchants fail to realize that business people must be prepared to locate quickly financial leaks and to plug them by correcting the conditions that cause them. He outlined the fields that new businessmen should study and older businessmen should review such as: office management (even in the 3-4 man shop), marketing, sales, advertising, public relations, engineering, purchasing, production scheduling, insurance and taxes.

He said that if a business is to grow, the dealer must continue to study, and recommended as the best source of information the leading publication covering the dealer's trade.

To emphasize this point of view, Clyde M. Barnes described in detail articles published in American Artisan showing how dealers in all parts of the country have beaten the price squeeze. He related how a Gary dealer trains real estate salesmen to sell year 'round air conditioning. This method of selling has made it possible for him to get the price he asks when dealing with builders.

Another method used by a dealer in Middletown, N. Y., to locate remodeling and replacement prospects was outlined. Mr. Barnes also described the 13 week sales promotion program conducted by the heating dealers of Milwaukee.

The use of a sales promotion budget, based upon the successful operation of a Springfield, Ill. dealer, was discussed along with a method of determining the leads obtained to find the most effective advertising media for a particular area. This dealer spent 5 percent of his annual sales volume for sales promotion. (The cost was

equally divided between dealer and manufacturer.)

Mr. Barnes told of another dealer who is beating the price squeeze in Terre Haute, Ind. This dealer spends 4 percent of his annual sales volume to build sales. The operation, known as the "Test Dealer" project, was undertaken by a furnace manufacturer who provided the basic advertising formula that helped raise his 1954 annual volume of \$111,000 to \$204,000 in 1955 and increase this total to \$278,000 in 1956. Profits during 1955 rose 40 percent above that of 1954 and during 1956 an additional 35 percent in profit was recorded.

A brief review of the recent summer convention of the National Warm Air Heating and Air Conditioning Association was made by Mr. Barnes as he tied the convention speeches in with how to beat the price squeeze at the dealer level.

Coming Events

- Oct. 7-9 — American Gas Association, annual convention. Kiel Auditorium, St. Louis, Mo. C. S. Stackpole, managing director, 420 Lexington Ave., New York 17.
- Nov. 14-16 — American Society of Refrigerating Engineers, semiannual meeting. Shoreland Hotel, Chicago. R. C. Cross, executive secretary, 234 Fifth Ave., New York 1.
- Nov. 18-20 — National Heating & Airconditioning Wholesalers, Inc., annual convention. Hotel Morrison, Chicago. W. R. Bull, executive director, 1200 W. Fifth Ave., Columbus, Ohio.
- Nov. 18-21 — Air-Conditioning and Refrigeration Industry, 10th exposition. International Amphitheater, Chicago. Air-Conditioning and Refrigeration Institute, 1346 Connecticut Ave., N.W., Washington 6, D.C.
- Nov. 19-22 — National Warm Air Heating and Air Conditioning Association, annual convention. Hotel Morrison, Chicago. George Boeddener, managing director, 640 Engineers Bldg., Cleveland 14.

THESE

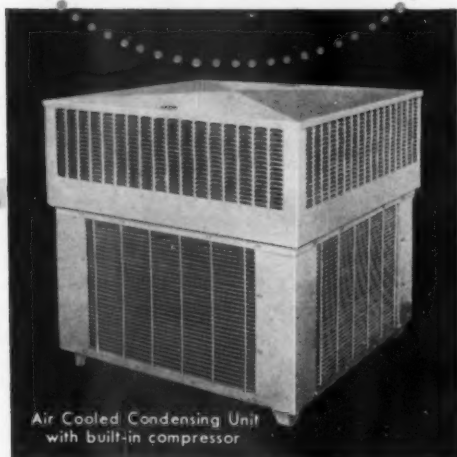
McQuay

TWO UNIT AIR CONDITIONING SYSTEMS WILL MAKE SALES FOR YOU!



REQUIRES NO WATER MOUNTS ANYWHERE OUTDOORS

This new McQuay outdoor type condensing unit with built-in hermetically sealed compressor is air cooled and requires no water. It mounts anywhere outdoors—adjacent to the foundation, in the breezeway or even on the roof. It is compact, quiet and efficient, with exceptionally high capacity. An indoor control panel, and hi-lo safety control is standard equipment.



Air Cooled Condensing Unit
with built-in compressor

2, 3 and 5 Ton Capacities

Air Conditioning

WITH PLENUM INSTALLATION.

The McQuay vertical "RE-V" type evaporator utilizes the furnace blower. Suitable for all types of forced warm air furnaces including counterflow. All McQuay units are bonderized and attractively finished. Available in 2, 3, and 5-ton capacities to balance the outdoor condensing unit.



Vertical Evaporator
for furnace mounting

OR

Air Conditioning

WITH DUCT INSTALLATION.

The McQuay horizontal "RE-H" type evaporator with forced warm air systems also uses the furnace blower. McQuay evaporators are also built in 2, 3, and 5 ton sizes to match the outdoor condensing unit. All are thoroughly insulated with fiberglass. Service panel and space for internal valve mounting is provided.



Horizontal Evaporator
for duct mounting

OR

Air Conditioning

WITH REMOTE INSTALLATION.

The McQuay blower evaporator utilizes its own independent duct system, or may be used for direct air discharge. Ceiling mounted for use in systems lacking air capacity. 2, 3 and 5 ton capacities to match outdoor condensing unit. Drain pan for removal of coil condensate is built into all McQuay evaporators.



Blower Evaporator
for ceiling mounting

One of these new air cooled two unit McQuay air conditioning systems will enable you to meet any specifications on either new or existing jobs. They are highly efficient, low in cost, extremely quiet, and feature the exclusive McQuay ripple-fin construction. Get the jump on your competitors. Look into these two unit McQuay air conditioning systems and sell complete air conditioning—for every possible job. McQuay, Inc., 1653 Broadway St. N.E., Minneapolis 13, Minn. Representatives in all principal cities.

**Gives you complete air conditioning
for every possible job!**

AIR CONDITIONING • HEATING • REFRIGERATION



McQuay INC.

EQUIPMENT DEVELOPMENTS

The latest information on manufacturers' developments is presented here with brief summaries of the applications of these products. For additional product information which is available, see this month's New Literature department

Gas Safety Valve

SAFETY VALVE for gas-fired furnaces and other equipment—*General Controls Co., Dept. AA, 801 Allen Ave., Glendale, Calif.* Unit has four-position head which can



be adjusted in the field with screwdriver to fit existing pilot and thermocouple runs. Unit is available with or without pilot takeoff, "B" valve, pilot adjustment and independent pilot flow.

Nibblers, Drills, Shears

NO. 16 PORTABLE NIBBLER, $\frac{1}{2}$, $\frac{5}{8}$, and $\frac{3}{4}$ in. drills, and no. 16 portable shear—*Black & Decker Mfg. Co., Dept. AA, Pennsylvania Ave., Towson 4, Md.* Nibbler delivers 3300 strokes per minute, features sealed ball



bearings, high speed steel cutting die, reversible punch, auxiliary knob for two-hand control, accessory compartment, punch-and-shoe design for following pattern line, and adjustable stripper plate to accommodate different material thicknesses. It weighs $5\frac{1}{2}$ lb. Drills feature increased torque and speed, reverse drives, key drive chuck. Heavy duty $\frac{1}{2}$ and $\frac{3}{4}$ in. drills weigh $15\frac{3}{4}$ lb and $16\frac{1}{4}$ lb respectively; $\frac{3}{4}$ in. standard model weighs $17\frac{1}{4}$ lb. Shear is said to cut through cold rolled steel at speeds up to 30 fpm. One-piece

shoe is contoured to indicate correct cutting angle and permit cutting to a small radius. Quick blade adjustment accommodates different thicknesses of material. Deflector plate prevents curling of trimmed metal and other fouling of material. Shear weighs $6\frac{3}{4}$ lb.

Blower Motor and Wheel Mounting

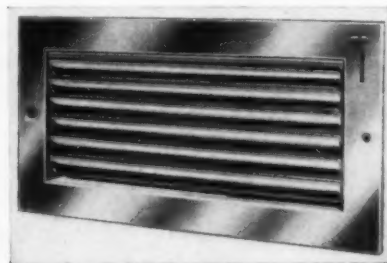
MOUNTING WHICH holds blower motor and wheel at their center of balance—*Viking Air Products, Dept. AA, 5601 Walworth Ave., Cleveland 2, O.* Three arm



motor support holds motor band which circles motor at center of gravity of motor-wheel combination. Band has cushions which guard against vibration, absorb noise and conduct static electricity through blower. Units are designed for company's Series B blowers.

Replacement Grille

"CONVERTI-GRILLE" Model DC-90 designed to replace stamped registers when adapting warm air systems to add summer air conditioning—*Titus Mfg. Corp., Dept.*



AA, Box 810, Highway 20 West, Waterloo, Ia. Slipped into place formerly occupied by stamped registers,

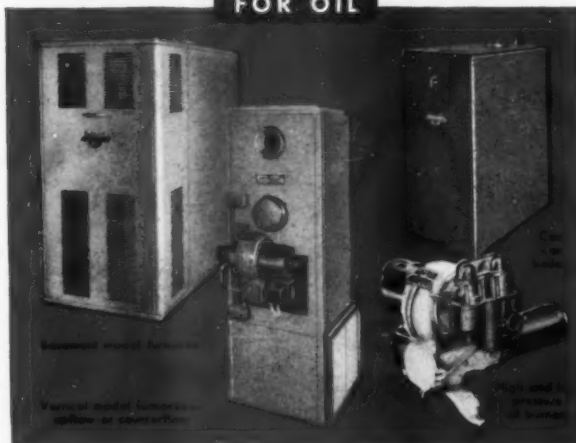
WHY THIS NAME IS WORTH MORE TO YOU

STEWART-WARNER

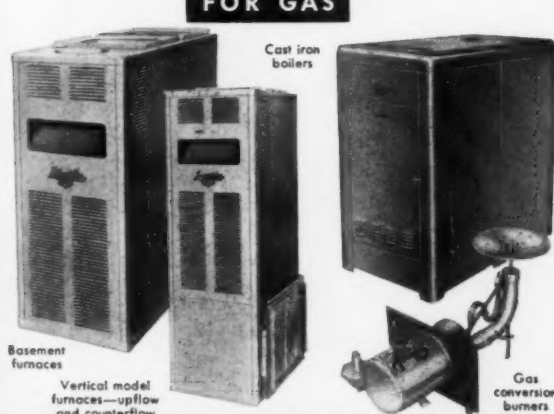
Winkler

- ① A LINE SO COMPLETE YOU NEED NEVER LOSE A SALE.
- ② EVERY PRODUCT OUTSTANDING IN QUALITY.
- ③ PLENTY OF MERCHANDISING MATERIAL.
- ④ COOPERATIVE ADVERTISING PLAN.
- ⑤ SELLING HELP BY STEWART-WARNER DISTRICT MANAGERS.
- ⑥ FREE SALES AND ENGINEERING TRAINING BY FACTORY EXPERTS.
- ⑦ SUPPORTED BY NATIONAL ADVERTISING.

FOR OIL



FOR GAS



You're really in business when you handle the Stewart-Warner-Winkler line! You have available everything a home builder or modernizer could possibly demand for a completely modern heating and cooling system. No lost sales because of a "short" line.

This is *quality* equipment—every unit distinguished by advanced engineering which translates into better performance, longer life and trouble-free performance.

So why shop around...why get involved with numerous sources of supply. Concentration on Stewart-Warner-Winkler protects you with one manufacturer's undivided responsibility...saves your time, hence increases your selling opportunities.

FREE TRAINING FOR STEWART-WARNER DEALERS

As a dealer, you and your employees are entitled to receive an intensive course of instruction at the Stewart-Warner-Winkler Training Institute. You'll leave this school fully qualified to sell and install today's most complete line of heating and cooling equipment.

FOR YEAR 'ROUND AIR CONDITIONING



Stewart-Warner
Winkler
representatives
cover the nation



Write, wire or call today for complete information

STEWART-WARNER CORPORATION

HEATING AND AIR CONDITIONING DIVISION • Dept. A-77, Lebanon, Ind.

equipment developments

(Continued)

grilles are adjusted for correct air pattern for cooling by adjusting gang operated louvers. Grilles have built-in, single valve damper operated from face of grille. Heavy duty sponge rubber gasket seals unit. Units are in 10 × 6 in., 12 × 6 in., and 14 × 6 in. sizes; Model DC-90B has 7/8 in. protection flange for base-board installations.

Glass Fiber Duct

SELF-INSULATED glass fiber air duct for residential heating and cooling—*Gustin-Bacon Mfg. Co., Dept. AA, 210 W. 10th St., Kansas City 7, Mo.* Supplied in



6 ft sections, duct can be used as complete duct system, as runouts from metal extended plenums or as sound absorbers in existing systems. Fittings can be cut with knife. K factor is said to be 0.21 at 50 F mean temperature. Duct comes in standard sheet metal sizes: 4, 5, 6, 7, 8, 9, 10, 12 and 14 in. i.d. Packaged sets are available for attic mounted installations.

Angle Iron Shear

HYDRAULICALLY OPERATED angle iron shear operated by foot treadle and adaptable for use in conjunction with the company's No. 95 hydraulic press—*W. A.*

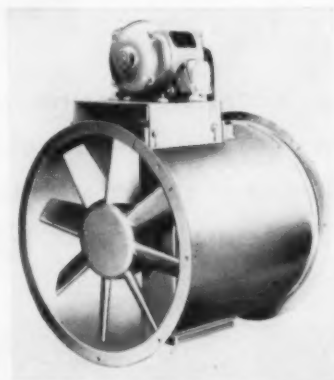


Whitney Mfg. Co., Dept. AA, 636 Race St., Rockford, Ill. Unit has capacity of 4 × 4 × 1/4 in. angle iron, 3/8 × 3 1/2 in. flat, and other shaped stock with regular angle iron blades; other blades are available for special thicknesses and shapes. Blade is under complete con-

trol of the operator. Complete cycle time is 6 seconds with 3 hp motor. Side thrust blocks prevent misalignment; end distortion is eliminated, the company states.

Belt Driven Duct Fan

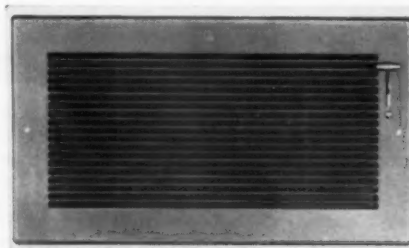
TYPE BD belt driven duct fan designed to operate under corrosive atmospheres and extreme temperatures—*Chicago Blower Corp., Dept. AA, 9867 Pacific Ave.,*



Franklin Park, Ill. Axial airfoil blade is shaped like airplane wing. Unit is said to handle temperatures up to 150 F; bearings are mounted inside air insulated belt housing so motor can be mounted horizontally or vertically. Unit is available with 2, 4, 6 or 8 bladed steel or aluminum wheels and in sizes from 12 to 72 in.

Register Damper Controls

BALANCING LEVER DAMPER control designed for standard size wall registers and sidewall diffusers—*Lima Register Co., Dept. AA, 1790 N. Cable Rd., Lima, O.*



Damper action is regulated by lever stop which can be moved and positioned by adjusting a set screw in the face of the register. Damper can be closed tightly for positive air shut-off and opened automatically for proper air volume.

Combination Gas Valve

MODEL V-600 combination gas valve, pressure regulator and safety pilot in single packaged unit—*Detroit Controls Corp., Dept. AA, 5900 Trumbull Ave., De-*



NEW RHEEMGLAS FURNACE... *designed* with summer air conditioning in mind!

You hear a lot about the new "add-on" summer air-conditioning units. How inexpensive they are. How easy they are to tie in with a forced-air heating system.

Indeed, cooling has come ahead fast in the past couple of years. And now, right on its heels, come new Rheem furnaces to make year-round air conditioning even more practical, more economical.

The brilliant new Rheemglas, for example, is actually engineered for cooling and has a built-in plenum (optional at small extra cost). With this special plenum for housing cooling coils,

part of your add-on installation job will already be done for you. And as if this weren't enough, the combustion chamber in this new beauty is lined—inside and out—with Rheemglas. The exclusive glass lining that eliminates rust and corrosion and carries a full 10-year written warranty!

Rheemglas is smaller, too. The slim 80,000 BTU model is only 14¼ inches wide. And there's more—much more your distributor can tell you about Rheemglas. And about the complete new Rheem line of highboys, lowboys, horizontals and counterflows—all engineered for cooling! Contact him now.

YOU CAN RELY ON



THE BIG NAME IN COMFORT PRODUCTS FOR THE HOME

central air conditioning, steam and hot water boilers,
water heaters, water softeners, plumbing fixtures

Home Products Division of Rheem Mfg. Co. / 7600 S. Kedzie Ave., Chicago 29, Ill.

GUARANTEED

... not for 5 years, not for 10 years
... not for 15 or 20 years — but

**UNCONDITIONALLY
GUARANTEED**



...FOR LIFE!

XXth Century
Zeph-Air

Zeph-Air is the gas furnace with the cast-iron heart. The heating element is unconditionally guaranteed — **FOR LIFE!**

A limited number of exclusive franchises protect our dealers — and we assist them with many kinds of dealer help.

Write today to see if a franchise is open for you. We'll give you the details you need and want — no obligation, of course. We'll also be pleased to furnish complete information on our air conditioning units for use with our heating equipment.

XXTH CENTURY

HEATING & VENTILATING CO.

Since 1894

96 IRA AVE.

AKRON, OHIO

equipment developments

(Continued)

troit 8. Features reported by the company are safe lighting, 100 percent pilot shut-off, and adaptability to



use with all gases. Unit is capable of handling up to 300,000 Btuh.

Plastic Duct, Hood Material

"RIGIPLY" TWO PLY lightweight plastic construction material for use in fume exhaust hoods, ducts, stacks, etc.—Heil Process Equipment Corp., Dept. B-AA,



12901 Elmwood Ave., Cleveland 11, O. Material is a glass fiber reinforced laminate of thermosetting resins which is said to be resistant to wide range of chemicals. Solid combination of two laminates, the material is suited for temperatures up to 250 F.

Gas Control

MODEL 5010 self-contained gas control for unit heaters etc.—A-P Controls Div., Controls Co. of America, Dept. AA, 2450 N. 32nd St., Milwaukee 45. Featured, according to the company, are silent operation, safe lighting and 100 percent shutoff. Integral unit can be used to regulate flow of all gases. Unit is available with or without built-in pressure regulator. Pilot adjustment modulates flame to suit equipment needs; pilot filter removes gas impurities. Control is available

*You've Never Seen
Registers Like These...*

*... Yet They're No More Ridiculous Than
The Dozens of Odd Size Registers
That Are on the Market*

Lima STANDARDIZED LINE GIVES YOU ONLY
THE REGISTERS THAT YOU SELL MOST OFTEN

**ONLY LIMA
gives you ALL
these profit
advantages:**

- ✓ **SIMPLIFIED
INVENTORY**
- ✓ **LESS
CAPITAL INVESTMENT**
- ✓ **FASTER
TURN-OVER**
- ✓ **REDUCED
WAREHOUSE SPACE**
- ✓ **SIMPLIFIED
HANDLING**
- ✓ **BETTER QUALITY**
- ✓ **GREATER
SALES APPEAL**
- ✓ **BETTER
CUSTOMER SERVICE**

If some manufacturer offered such crazy, odd-shaped registers as these — somebody would want to use them! You'd be expected to handle and stock them just like the many unnecessary odd-size registers that are being offered! Registers like these, we admit are ridiculous... but those odd-size registers are of doubtful value too... especially when you consider that 98% of your customers' register and diffuser needs can be answered with Lima's basic styles and sizes. Odd sizes account for so little of your business that they aren't worth their keep.

Ceiling, wall or floor, air conditioning or heating, residential or commercial... Lima's Standardized Line simplifies handling and inventory; reduces capital investment, improves your service by eliminating those odd sizes that rob you of warehouse space as they become dust-covered and obsolete.

The Lima line has been carefully planned to put more quality, more sales appeal into the product... and more profit into the pockets of the jobbers and dealers who sell Lima.

Many jobbers and dealers have already found out that Lima's Standardized Line answers their needs... **BETTER... at LESS COST!** It will pay you to make us prove our point.

Write us today!

***Lima* REGISTER COMPANY**

1786 N. Cable Rd., Lima, Ohio

sold exclusively through wholesalers and manufacturers



NOW there are 14 Vaporite MODELS

... a size and type Humidifier for every furnace installation.

EVERY MODEL TESTED AND PROVED

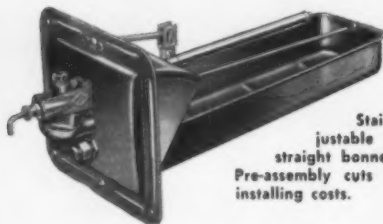


SERIES 555
Fits any straight side
warm air furnace.

Corrosion resistant, stainless steel vapor pan 4' x 15'. Completely assembled for quick and easy installation.

New copper overflow on Model 555C.

- No extras to buy
- No parts to assemble
- No extra holes to cut
- No tricky mounting

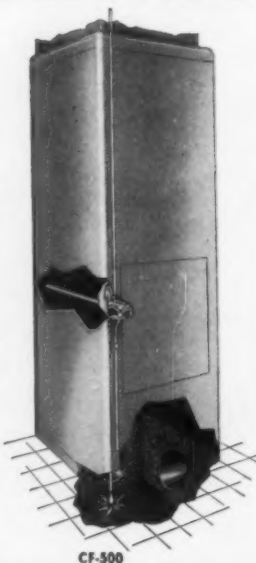


SERIES 577
Stainless steel. Adjustable to sloping or straight bonnet furnaces. Pre-assembly cuts labor time and installing costs.

EVERY MODEL WITH NEW SENSITIVE THERMOSTAT CONTROL TO ASSURE BALANCED HUMIDITY

LOW COST
FIELD-TESTED
COUNTERFLOW STYLE

- Designed especially for basementless houses with perimeter heating.
- Complete assemblies for furnaces with concrete floor plenums or with crawl space plenums.
- Installs in minute on exterior of furnace casing. All parts furnished.



CF-500

WRITE FOR CATALOG AA-7

AUTOMATIC HUMIDIFIER CO., Cedar Falls, Iowa.

equipment developments

(Continued)

in range of inlet and outlet sizes with side, bottom or straight-through outlets optional.

Central Vacuum Cleaning System

CENTRAL CLEANING system which can be installed by sheet metal contractors—*Premier Co., Dept. KP-AA, 755 Woodlawn Ave., St. Paul 1, Minn.* System is powered by either of two vacuum machines: a 600-w unit rated at 83 cfm, or a 1300-w unit with rated air



flow of 130 cfm. Both have pleated filter said to provide 1000 sq in. of filtering area. Three to six outlets are connected by conduit tubing installed within walls or under floors to vacuum unit in basement, utility room or attached garage. Included are tees, wyes, ells and outlet receptacles, 20 ft flexible extension hose and assorted attachments.

Reversed Cycle Window Units

REVERSED CYCLE heat pump window air conditioning units in 3/4, 1, 1 1/2 and 2 hp sizes—*Mitchell Mfg. Co., Div. of Cory Corp., Dept. AA, 2525 N. Clybourn Ave., Chicago.* Units are in "Roto-Cone," "Ultra-thin" and "Advance" models, ranging from 6,000 to 17,000 Btuh heating capacities. All models feature reverse cycle valve.

Vee Notching Units

"UNIPUNCH" SERIES B self-contained 90 deg vee notching units—*Punch Products Corp., Dept. AA, 3800 Highland Ave., Niagara Falls, N. Y.* Units have 5 1/2 in. shut height, 2 19/32 in. die height for setups to notch angle and sheet material equivalent to mild steel up to 1/8 in. thick on templates, T-slotted plates and rails in presses and press brakes. Units can be used in same setups with Series B perforating units for



From Mr. Tony Lee, owner of Lee's Automatic Heating in Cicero, Illinois, comes another report on Rheemaire central air conditioning. Placement of noisy, outsized condensers was his big problem. But no more. As Mr. Lee says, there are ...

"No noise... No space problems ever with Rheemaire air conditioning!"

Where do you put a rumbling, overgrown cooling condenser? In stores, offices and especially homes, that's always been a headache. Mr. Lee fought it for six years. "Six years," he says, "of struggling with the placement of large condensing units to avoid a high noise level."

But that's all over and done with. Today, he has no air-conditioning problems. No noise problem. No space problem. For now he sells revolutionary Rheemaire!

Bulk of system goes outdoors

In Mr. Lee's own words, "Rheemaire is the quietest running central air conditioner on the market. The condensing unit is so small and compact, too, that there's never any trouble finding a spot for it."

See that blue cabinet *outside* the home in the picture on the right. Small as it is, the cabinet houses the Rheemaire condenser, compressor and blower. The even smaller cabinet inside, nestled on top of the furnace, contains only the cooling coil.

That's the whole secret—why Rheemaire simply can't cause you any noise or space problems *ever*!

Cuts operating costs almost 50%

Of course, it all wouldn't mean much to your business if it weren't for this: Rheemaire cuts operating costs almost in half! Because *only* Rheemaire delivers up to 95% more cooling capacity per compressor h.p.

For example, a 1 h.p. compressor—

teamed with exclusive, pure copper *Air-Film Condenser*—gives 1.85 tons of cooling. And Rheem backs that rating with a \$1,000 capacity guarantee!

We say ask Tony Lee about Rheemaire. Or contractors Rocco Berkan

and Carl Clark in Carmichael, California. Or Murrel Stark in Wichita. He recently sold 13 Rheemaire systems in a single two-week period. And be sure to get your free Rheemaire booklet. Write us now!

YOU CAN RELY ON



THE BIG NAME IN COMFORT PRODUCTS FOR THE HOME
water heaters, warm-air furnaces, water softeners,
steam and hot water boilers, plumbing fixtures

Home Products Division of Rheem Mfg. Co. / Dept. AA15, 7600 S. Kedzie Ave., Chicago 29, Illinois



equipment developments

(Continued)

combination round and shaped hole punching, corner and edge notching, in same operation. Maximum 1 and 1½ in. deep vees are produced. Pilot pins help locate notching units on templates and rail adapters.



Oil- and Gas-Fired Furnaces

"Lo-Hi-Boy" OIL- AND GAS-FIRED furnaces in sizes ranging from 70,000 to 150,000 Btu input and from

84,000 to 125,000 Btu output—*Armstrong Furnace Co., Dept. AA, 851 W. Third Ave., Columbus 8, O.* All are designed for alcove, closet, utility room or attic installation, or can be adapted for basement installation; they can be combined with the company's cooling units. All units are factory assembled.

Service Truck Bodies

TRUCK BODIES designed especially for air conditioning servicemen—*Reading Body Works, Inc., Dept. AA, 420 Gregg Ave., Reading, Pa.* Models include utility and panel bodies with canopy tops in chassis sizes from ½ to 1½ tons. Bodies are heavy gage steel welded into one integral unit with watertight doors, reinforced tailboards and complete undercoating. Compartments, shelving arrangements and racks are designed especially to accommodate air conditioning components and tools.

Smoke Candle Leak Detector

SMOKE CANDLE for locating leaks, tracing duct air circulation and observing air distribution patterns—*Schiller Mfg. Co., Dept. AA, 409 E. Jefferson, Detroit 26.* Candles are available with yellow or white smoke, in 1, 2 and 3 minute sizes. Harmless stain is left around leaks. Candles do not break, cannot start unless deliberately lighted.

COUNT 'EM!

10

Plus BENEFITS WITH GENERAL FILTERS

We Compared ALL Leading Fuel Oil Filters FEATURE for FEATURE

- ▶ All Iron and Steel Construction
- ▶ Corrosion-Proofed Inside and Out
- ▶ Air Vents On Both Inlet and Outlet
- ▶ Choice of Inlet and Outlet Sizes
- ▶ Center Bolt Torque Resistance Over 300 In-Lbs.
- ▶ Non-Swelling, Leakproof Buna-N Gaskets
- ▶ Depth-Type Wool Felt Element
- ▶ Patented Lint Removal
- ▶ Moisture and Condensation Removal
- ▶ Large Sump Area

Only
GENERAL
HAS ALL
10
KEY
FEATURES

COMPARE! HERE ARE THE FACTS ABOUT FUEL OIL FILTERS!
Comparison of GENERAL FUEL OIL FILTERS with other leading makes

KEY FEATURES	GENERAL	FRAM	WIX	WIX	WIX	WIX	WIX	WIX
ALL IRON AND STEEL CONSTRUCTION	YES	NO	NO	YES	NO	NO	NO	NO
By Dept. of Self-Inspection Meeting to Check, etc. in other cases	YES	NO	YES	NO	NO	NO	NO	NO
CORROSION PROOFED INSIDE AND OUT	YES	NO	YES	NO	NO	NO	NO	NO
New invention: the plastic filter on both ends and outside surface of filter body inspection to meet with eye	YES	NO	YES	NO	NO	NO	NO	NO
AIR VENTS ON BOTH INLET AND OUTLET	YES	NO	NO	NO	YES	NO	NO	NO
Choice of Inlet and Outlet	YES	NO	NO	YES	NO	NO	NO	NO
Choice of Inlet and Outlet	YES	NO	NO	YES	NO	NO	NO	NO
Center Bolt Torque Resistance	YES	YES	NO	YES	NO	YES	NO	NO
Non-Swelling, Leakproof Gaskets	YES	NO	NO	NO	NO	NO	NO	NO
Depth-Type Wool Felt Element	YES	YES	NO	NO	YES	NO	NO	NO
Patented Lint Removal	YES	NO	NO	NO	NO	NO	NO	NO
Moisture and Condensation Removal	YES	YES	NO	NO	YES	NO	NO	NO
Large Sump Area	YES	YES	NO	NO	YES	YES	NO	NO
TOTAL KEY FEATURES	10	4	1	3	4	2	0	0

GENERAL FUEL OIL FILTERS OFFER MORE KEY FEATURES
MORE BURNER PROTECTION MORE CUSTOMER SATISFACTION



**MORE OIL BURNER PROTECTION...
MORE SATISFIED CUSTOMERS!
GENERAL FILTERS, INC.**

IN CANADA: Canadian General Filters, Ltd., 39 Kingston Road

SELL THESE ITEMS, TOO!
CLEAN RIGHT Soot Remover destroys ½" soot layer in 2-5 minutes. Can reduce heating costs 25%.

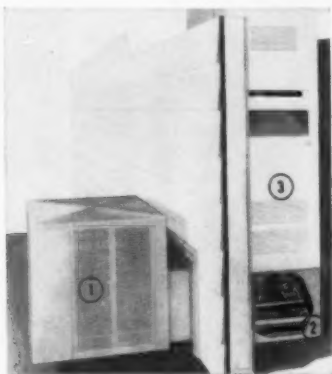
GENERAL HUMIDIFIER
Water Flow Regulator obsoletes floats... nothing like it!



(Continued)

Through-Wall Year 'Round Units

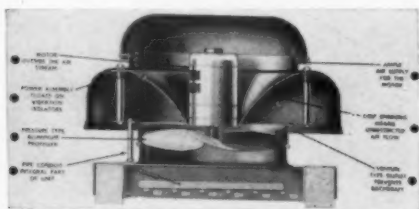
YEAR 'ROUND unit consisting of gas-fired furnace and packaged air cooled condensing unit-cooling coil which inserts through house wall into furnace—*Frigidaire Div., General Motors Corp., Dept. AA, 300 Taylor St.,*



Dayton 1, O. Furnace is rated at 105,000 Btu input; condensing unit has 2 ton capacity, and inverted V type evaporator cooling coils with plenum are also rated at 2 tons. Coils are inserted through wall opening and into plenum under furnace; condensing unit remains outside on concrete slab.

Aluminum Propeller Ventilators

TYPE FD ALL-ALUMINUM propeller roof ventilator constructed of spun aluminum except for motor—*Loren Cook Co., Dept. AA, 227 Depot St., Berea, O.* Direct



drive unit has pressure type propeller. It is in four sizes from 680 to 4040 cfm; power assembly rests on rubber vibration isolators. Two-speed and explosion-proof design are available from the company.

Oil Burner Nozzles

TYPE W "ALL-PURPOSE" oil burner nozzles in sizes ranging from 0.50 through 1.35 gph—*Delavan Mfg. Co., Dept. AA, Grand Ave. & Fourth St., West Des Moines, Ia.* Designed to eliminate confusion toward proper usage of hollow and solid cone nozzles, "all-purpose" unit is said to improve most fires regardless of the type of installation.



Saws openings for ducts through plates, sub-floors or studs . . . easy . . . fast!

**Nothing like
it for sawing
duct openings
*FAST!***

Milwaukee's SAWZALL ends tedious back-breaking hand sawing in walls, floors, and ceilings. Needs no starting hole in wood and like materials . . . plunge-cuts right in! Only 6½ lbs. 14½" long. Gets into tight spots . . . guides easily with one hand. Quickly pays for itself. Super-powered by a Milwaukee-built ½ hp motor. Cuts at 2250 strokes a minute.

Over 35 SAWZALL blade types for all materials. With assorted blades and steel carrying case...only **\$89⁵⁰**

For free demonstration see your Milwaukee distributor, or write for folder SW6.

**MILWAUKEE ELECTRIC
TOOL CORPORATION**
5352 W. State St., Milwaukee 8, Wis.

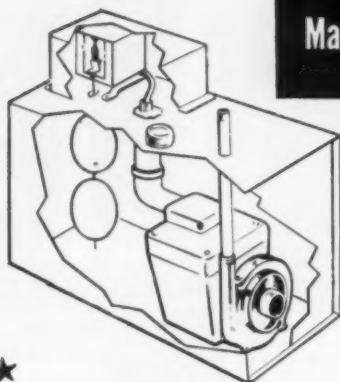


Milwaukee
SAWZALL

No. A7-9246



Little Giant



for
the
AIR -
CONDITIONING
Market



CONDENSATE UNIT

For Refrigerated Units!

- Hermetically sealed Little Giant Recirculating Pump for trouble-free self-lubricating operation.
- Positive displacement switch with float control, double pole switch for complete circuit break plus a three-conductor cord available.
- Sturdy metal tank corrosion resistant.
- Small and Compact.
- Quiet in operation.
- Completely automatic.

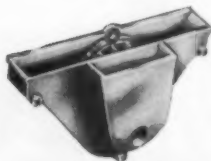
PUMPS FOR ANY AIR CONDITIONING APPLICATION



Little Giant

★ RECIRCULATING PUMP

- Little Giant Pump, hermetically sealed in oil, self lubricating.
- Die-Cast aluminum case.
- Small and compact.
- Economical to operate.
- Available for 110 volt 60 cycle or 220 volt single phase current.
- Can be operated completely submerged.



ALSO AVAILABLE WITH
VAPORIZER HEAD AND
IMPELLER FOR EVAPORATIVE
COOLERS

Write for free catalog and price list
today!

Little Giant PUMP COMPANY



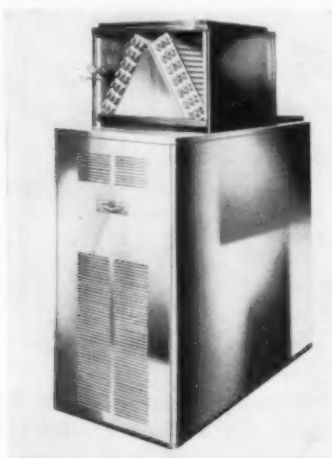
Division of Little Giant Vaporizer Company, Inc.
5101 Classen Blvd., Oklahoma City 18, Okla.

equipment developments

(Continued)

Oil- and Gas-Fired Furnaces

"WIZ" LINE OF oil- and gas-fired furnaces in various arrangements, designed to accommodate add-on cooling—Heating and Air Conditioning Div., Stewart-Warner Corp., Dept. AA, Lebanon, Ind. Accordion



type heat exchanger is designed to increase heating surface; gas burner controls are in single unit. Units can be supplied as year 'round installations with remote condensing unit. Oil-fired furnaces are rated at 85,000 Btu output; gas-fired units range from 80,000 to 120,000 Btu input.

Impingement Filters

"FAR-AIR" TYPE F/S permanent impingement air filters with cleanable metal screen media—Farr Co., Dept. AA, Box 45187, Airport Sta., Los Angeles 45. Unit is designed to deliver 350 to 520 fpm air flow. Filter media, of flat and corrugated rows of wire screen mesh, will not gap or separate, the company states. Designed in standard sizes, filter can be cleaned with stream of water followed by dipping in or spraying with adhesive. Clips are attached to holding frame for installation.

Water Cooled Units

SCR LINE OF water cooled self-contained cooling units in 7½, 10 hp and larger models—Drayer-Hanson, Div. of National-U.S. Radiator Corp., Dept. AA, Box 2215, Terminal Annex, Los Angeles 54. Sectional construction permits remote location of condenser section if desired. Compressor section uses full sized copper tube and aluminum fins. Optional equipment includes flat or V type filter section, and cleanable or throw-away filters.

HOME REMODELING AND FURNACE REPLACEMENT

Call for MODERN
AIR DISTRIBUTION SYSTEMS
DESIGNED FOR YOUR USE BY
CHAR-GALE



Homeowners bringing older homes up-to-date, want more than half-way measures . . . and with Char-Gale "Gale-Aire" comfort air distribution systems, you can go *all the way* to provide satisfaction. Complete Char-Gale perimeter systems, engineered for efficient operation and improved appearance, offer a welcome contrast to the bulky, old-fashioned equipment they replace.

FOR BOTH HEATING AND COOLING

The question of *complete* air conditioning is under control with Char-Gale. That's because Char-Gale fittings, ducts and registers are designed to handle *both* heating and cooling.

SIMPLE INSTALLATION

All the elements of Char-Gale systems fit together quickly and easily —no strain, no pain.

EFFICIENT OPERATION

Designed and tested for overall performance that will give true customer satisfaction.

IMPROVED APPEARANCE

The *neat* look of Char-Gale small pipe systems is a "feather in the cap" of the installer.

BETTER USE OF SPACE

There's plenty of head room in a basement with the Char-Gale duct-work tucked out of the way.

COMPLETELY PACKAGED

Protected against damage, all Char-Gale material is easily stored right in the cartons.

ONE SOURCE

Complete air distribution systems; no worry about matching units from different sources.



Watch for
Something
NEW!

... Coming soon from Char-Gale

GET *Your* SHARE

of this profitable replacement
and remodeling market

Distributors, Wholesalers and Dealers who stock the simplified "Gale-Aire" system, get a *complete, modern* air distribution line that's easy to store, sell and install. And it's not necessary to tie up capital in large inventories of duct, fittings and registers. Char-Gale trucks travel anywhere in the country, *in a hurry!*

Contact your jobber or write us.

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MANUFACTURING COMPANY
ANOKA, MINNESOTA

How to WIN Customers and INCREASE PROFITS!

Fits Every
Furnace,
Every Type
Boiler



Feature and Sell the New
Auto flo '150'
AUTOMATIC HUMIDIFIER
with the Revolutionary New
and Unbreakable Glass Fiber . . .



EVAPORATOR PLATES

Absolutely unbreakable . . . pick up
water faster . . . evaporate more
water . . . rustproof drain clips
prevent drip.

Advanced Design

New Cut-Out Template Reduces Installation Time by
Half • Inspection Plate Slips on and off without
Tools • 50% More Humidifying Capacity • No
Moving Parts • Nothing to Stick, Clog or
Require Frequent Service.

AUTO-FLO CORPORATION

12085 Dixie Street, Detroit, 39 Michigan

Please send me full information on:

- ☐ Auto-Flo Fuel Oil Filter
☐ Auto-Flo Automatic Humidifier

Name _____

Address _____

City _____ Zone _____ State _____



equipment developments

(Continued)

Heating-Cooling Line

HIGHBOY AND COUNTERFLOW furnaces in oil- and gas-fired models and air and water cooled summer air conditioners—Mor-Sun Div., Morrison Steel Products, Inc., Dept. AA, P. O. Box 3003, 601 Amherst St., Buffalo 11, N. Y. Furnace line features new cabinet



design, "thermo-dynamic" heat exchanger, re-engineered blower and washable air filters. Air cooled units are 2, 3, and 5 hp., with remote condensing units. Air and water cooled add-on units are in same sizes; packaged 2 and 4 hp air cooled units are designed to utilize existing duct work. Commercial units are also available.

Unit Heaters

"SUNNYAIRE" gas-fired unit heaters in seven sizes—Crane Co., Dept. AA, 836 S. Michigan Ave., Chicago 5. Units feature aluminized steel heat exchangers, built-



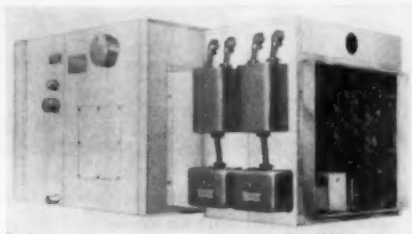
in draft diverters to resist high-temperature corrosion, fully automatic controls, permanently lubricated fan motors and hinged access door for burners and pilot. Unit is said to require 18 seconds between start and delivery of heat at full rating. Unit heaters burn natural, manufactured or mixed gases.

equipment developments

(Continued)

Heat Pump

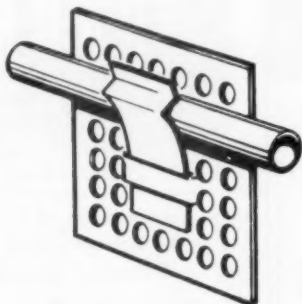
"MAGI-TEMP" heat pump in indoor and outdoor sections—York-Shipley, Inc., Dept. AA, 500 Jessop Pl., York, Pa. Indoor section includes centrifugal blower, glass fiber filter, heater section and evaporator coil which becomes a condenser during reverse-flow cycle. Outside section contains hermetically sealed compressor, centrifugal blower, motor and condenser coil which



serves as evaporator when heat is being supplied indoors. Units are in three sizes. Model ACR7-20RD has 2 hp compressor, cooling capacity of 24,000 Btuh and heating capacity from 22,500 Btuh at 60 F outdoors to 12,500 Btuh at 20 F. Model ACR7-30RD has 3 hp compressor with cooling capacity of 33,000 Btuh and heating capacity from 33,000 at 60 F to 18,000 at 20 F. Model ACR7-50RD has 5 hp compressor, cooling capacity of 62,000 Btuh and heating capacity from 60,000 Btuh at 60 F to 33,000 Btuh at 20 F. All have 30 amp heating coils which add 22,700 Btuh and 60-amp units which add 45,400 Btu, the company states.

Tubing Spring Clip

TUBING SPRING clips designed to hold conduit, flexible metal tubing, etc. to ducts and other surfaces—Stic-



Klip Mfg. Co., Dept. AA, 500 Regent St., Cambridge 40, Mass. Unit is $\frac{3}{8}$ in., for larger diameter tubing. Application of adhesive-covered tubing spring clip to a surface base increases adhesive bond to maximum tested holding strength of 75 lb per clip, according to the company.



Quickdraft...

THE WORLD'S MOST EFFICIENT POWER EXHAUSTER

...for industry... for institutions... for residences

- ★ NO MOTORS, FANS OR BEARINGS IN EXHAUST LINE
- ★ NEEDS NO STACKS ★ ACID RESISTING VITREOUS ENAMEL FINISH

FOR INDUSTRY, Quickdraft excels in venting paint booths... abrasives... corrosive gases... noxious fumes... high temperatures and moisture. Its blower operates in clean or outside air. It eliminates down-time for cleaning and replacing fan blades. It improves industrial venting and reduces maintenance costs!

FOR INSTITUTIONAL AND COMMERCIAL BUILDINGS, Quickdraft efficiently vents heating plants, water heaters and incinerators at roof level. It saves the cost of building unsightly tall stacks.

FOR RESIDENCES, Quickdraft makes low, cold and erratic chimneys function. On and off with the fire, Quickdraft maintains constant draft required for efficient and economical combustion of all fuels. It eliminates pulsating or chattering, puffing, smoking and sooting.

SEND FOR QUICKDRAFT ENGINEERING DATA ON YOUR VENTING OR HEATING APPLICATIONS... TODAY.

Quickdraft COMPANY

P.O. Box 87-D, Dueber-Hampden Bldg., Canton 1, Ohio

N-484-QD

Quickdraft Company
P.O. Box 87-D, Dueber-Hampden Bldg., Canton 1, Ohio
Please send Quickdraft engineering data for

- ☐ Industrial Exhausting
- ☐ Commercial Heating Plant
- ☐ Residential Heating Plant

Firm _____

Individual _____ Title _____

Street _____

City _____ Zone _____ State _____

NOW, all sizes can be furnished with static pressures up to 10-inches... and in Type-1 Rigid Polyvinyl Chloride for withstanding highly corrosive acids.

**REDUCE
DUCT
COST**



**meets and
exceeds all
F.H.A.**

criteria and test re-
quirements for prod-
ucts in this category

SONOCO SONOAIRDUCT® FIBRE DUCT

SONOCO Fibre Duct enables you to buy your duct at LESS cost and install faster in loop and radial gas and oil fired, slab-floor perimeter heating systems! This means you save time, labor and money—and you do it with a product that has proven itself in thousands of trouble-free installations.

SONOCO Fibre Duct is lightweight, easy to handle and level. Aluminum foil lined. Fast delivery on 23 sizes—2" to 36" I.D., up to 50' long. Can be sawed to exact lengths on the job. FREE installation manual available upon request.

Photo shows
SONOCO Fibre
Duct installation
at Permanent
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Fort Campbell, Ky.
Bateson Const.
Co., Dallas, Texas,
general contrac-
tor. Arthur C.
Harpring Co.,
Louisville, Ky.,
heating contractor.

See our catalog in SWEETS



SONOCO PRODUCTS COMPANY

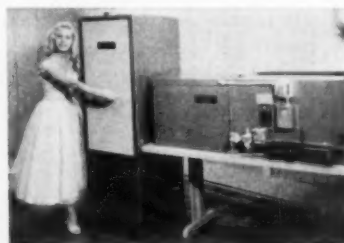
CONSTRUCTION PRODUCTS DIVISION
HARTSVILLE, S. C.

LOS ANGELES, CAL. MONTCLAIR, N. J.
8955 SOUTH WESTERN AVE. 14 SOUTH PARK STREET
AKRON, IND. • LONGVIEW, TEXAS • BRANTFORD, ONT. • MEXICO, D. F.

equipment developments (Continued)

Gas-Fired Furnaces

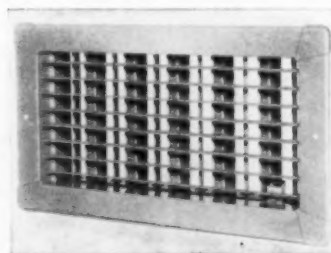
COUNTERFLOW AND horizontal gas-fired furnaces in wide range of capacities—*Worthington Corp., Dept. AA, Harrison, N. J.* Units feature



"floating" heat exchanger which can expand without stress and strain, according to the company. Also featured is drawer-type blower section which slides in and out for service and adjustment. High static blower is designed to accommodate add-on cooling. Horizontal unit has separate fan section on either end of heating section.

Register Grilles, Valves

"FLEXI-TROL" grilles and attachable valves which can be combined to form registers—*Lima Register Co., Dept. AA, 1790 N. Cable Rd., Lima, O.* Each valve fits 14 different grille



styles. Line consists of single deflection grilles with vertical or horizontal bars, and double deflection grilles with vertical bars in front of horizontal bars or vice versa, in standard sizes. Valves feature opposed action louvers with double overlapping edges. Valves are designed to fit standard size stack heads and ducts in standard wall construction. Grilles have adjustable bars.

THE MARK OF QUALITY



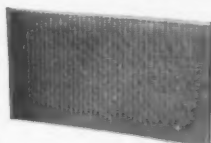
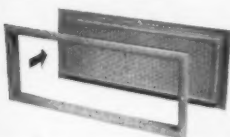
Uni-Flo

ENGINEERED AIR
DISTRIBUTION



UNI-FLO MODEL ED GRILLE

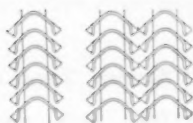
Rugged construction with frame for both sides of door. Telescoping design shown below permits use with doors from 1 3/8" to 2" thick.



SIGHT-TITE CORE ONLY

In specific sizes to meet individual requirements, and convenient stock sizes which may be custom-cut by the contractor.

UNI-FLO MODEL AF GRILLE, below, has simple U-Moulding.



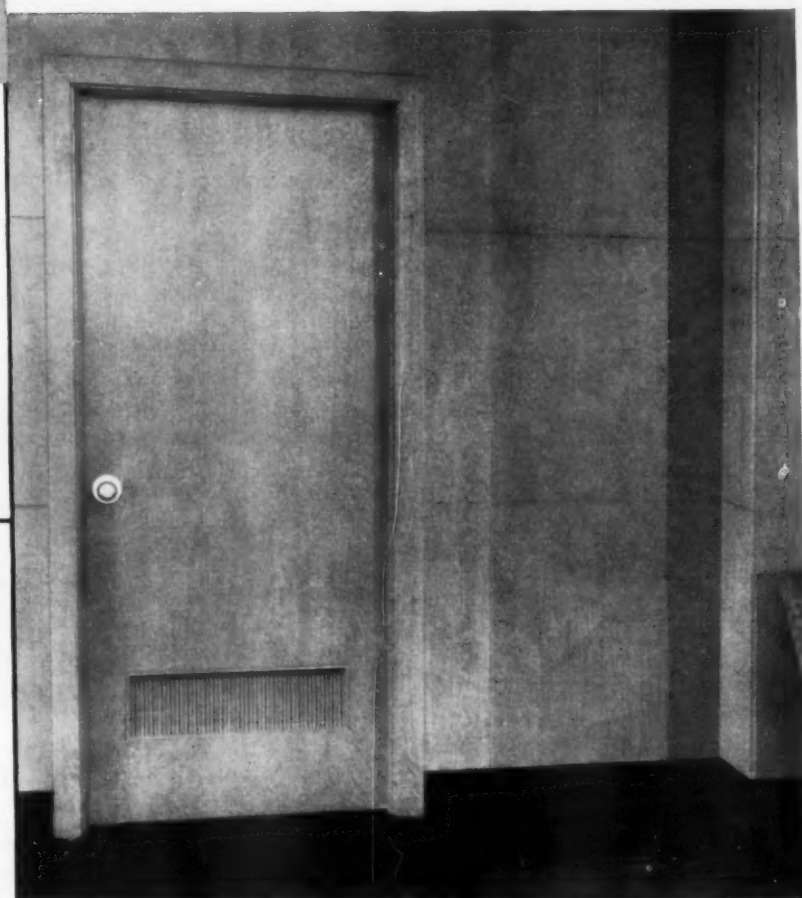
Sight-Tite Light-Tite

Core cross section at left shows Uni-Flo Sight-Tite Grille. Cross section at right shows Light-Tite installation for photographic darkrooms and laboratories.

visionproof, inconspicuous

Sight-Tite Door Grilles

to complement contemporary interiors



Handsome and strong Uni-Flo Sight-Tite Door

Grilles provide free air movement for offices, dressing rooms, locker rooms, school rooms, and other areas, without unsightly "see-through" gaps. Because of their inherent extra strength, Uni-Flo Sight-Tite Door Grilles withstand scuffing and kicking. Rattleproof construction also contributes to a finer installation. Available with six standard baked enamel and electroplated finishes, or special baked enamel finishes to match any color. With frame, or as core alone, in wide range of sizes to meet your job requirements. See your nearest Barber-Colman Field Office, or write for catalog.

BARBER-COLMAN COMPANY

Dept. S, 1106 Rock Street, Rockford, Illinois

When that 'tough' customer says ...



Just tell him ...



Yes, the new Reznor is the first completely modern gas unit heater ... modern design from any angle, front or back ... and functional design, not just "fashionable" design.

The new Reznor proves that the back of a heater need not be an eye-sore and a dust-catcher. There are no dangling gadgets, no unsightly hang-ons and no confusion of piping, controls and connections. All controls and connections are conveniently grouped inside the cabinet, easily accessible through a snap-out door on one side of the unit. This means greater eye appeal for easier selling. It means greater ease of installation and service, too. And it's a Reznor exclusive.

The new Reznor has a new look ... but it still offers the same rugged construction, reliable performance and top efficiency which have made Reznor the top name in unit heating. See your Reznor distributor for details on what this can mean to you.

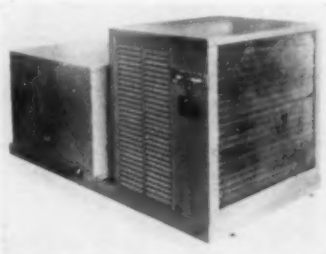
REZNOR
WORLD'S LARGEST-SELLING DIRECT-FIRED
UNIT HEATERS

Reznor Manufacturing Co., 6 Union St., Mercer, Pa.

equipment developments (Continued)

Cooling Line

LINE OF WATER and air cooled summer air conditioners in 2, 3 and 5 ton capacities, plus "Frigipak" self-contained model and split system installations—*Armstrong Furnace Co.*,



Dept. AA, 851 W. Third Ave., Columbus 8. Split system models are adapted for use in homes with complete duct system. Condensing unit can be installed outside with cooling coil installed above, behind, beside or below existing furnace. "Frigipak" self-contained model can be installed in attic, over door or in cellar window or wall.

Installation Kit

RESIDENTIAL air conditioning installation and service tool kit—*Imperial Brass Mfg. Co.*, Dept. AA, 1200 W. Harrison St., Chicago 7. Steel tool



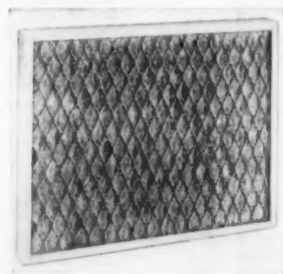
box contains tube cutter with spare cutting wheel, flaring tool, tube benders, swedging tools and tube reamers, double gage charging and testing unit, and two charging hoses. Box has two cantilevered trays; 12 dividers are included for trays. Kit can be locked. Full weight is 34½ lb; size is 21 × 7½ × 7¼ in.

Circular Diffusers

TYPE CN circular air diffusers with spun aluminum rings—*Air Devices, Inc.*, Dept. AA, 185 Madison Ave., New York 16. Center core is removable for mounting and to provide access to volume damper with equalizing vanes. Diffusers are in various sizes for cooling or heating applications, according to the manufacturer.

Dry Type Filters

"A-LUM-O-AIRE" permanent dry type filters for residential, commercial and industrial air cleaning requirements—*Carey Electronic Engineering Co.*,



Dept. AA, 1880 Clifton Ave., Springfield 2, O. Tiny barbs of aluminum-wool media catch and hold particles. Rustproof, fireproof and chemical resistant filters are cleaned with vacuum or flushed with water. Units are in standard or custom sizes, in ½, 1 and 2 in. thicknesses.

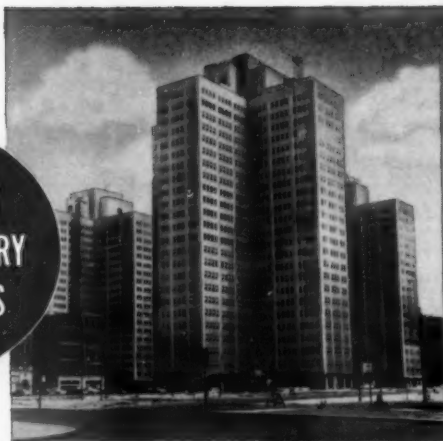
Electric Hammer

"SLUGGER" heavy duty electric hammer designed to facilitate drilling, cutting and chiseling—*Modern Mfg. Co.*, Dept. AA, Edgemont & Clementine Sts., Philadelphia. Unit is said to drill ⅞ in. hole 1 in. deep in concrete in 30 seconds. Equipped with quick-change chuck, unit will handle any of the company's 40 tools.

Fill Alarm, Tank Gage

NO. 600 "KING" combination fill alarm and tank gage in various sizes—*Oil Equipment Mfg. Corp.*, Dept. AA, 169 Derby Ave., New Haven, 6, Conn. Protective finish on all components makes unit corrosion resistant. Units are shipped in cartons

FOR NEW
MULTI-STORY
BUILDINGS



... OR
SHEATHING OLD
STRUCTURES



... OR BIG
INDUSTRIAL
OFFICES



... OR SMALL
INDUSTRIAL
BUILDINGS



STAINLESS CURTAIN WALLS

give you the best "long pull" investment

"INFO" for Architects and Builders

- 1 "AL Stainless Steels for Building"—12 pages on stainless grades, properties, forms, finishes, standard "specs," uses and advantages.
- 2 "Stainless Steels for Store Fronts and Building Entrances"—40 pages of valuable data on examples and details. AIA File No. 26D.
- 3 "Stainless Steel Curtain Walls"—A 24-page progress report on methods. AIA File No. 15-H-1.

Write for Details
Address Dept. AA-91

Curtain wall panels faced with AL Stainless Steel have *all* the advantages. They can give your building the truly modern look. They have a soft, highly attractive luster and permit wide latitude in design for individual appearance. They're light and strong . . . can be used for sheathing or "face-lifting" operations on existing structures, as well as for any type or size of new commercial building or institution.

Compared to brick or masonry construction, stainless curtain walls present savings at every turn: in lighter foundations; in enlarged floor space; in fast all-weather erec-

tion; in reduced maintenance, easy cleaning and freedom from painting. And—compared to any other curtain wall facing material—stainless steel is the hardest, strongest and most resistant to smoke, fumes, weather, wear, etc. It is the one material that can best take a beating . . . that costs the least in the long run because it lasts the longest.

Our Engineering and Research Staffs, etc., are at your service—anywhere, anytime. • Let us work with you. *Allegheny Ludlum Steel Corporation, Oliver Bldg., Pittsburgh 22, Pa.*

Make it **BETTER**—and **LONGER LASTING**—with

AL Stainless Steel

WAREHOUSE stocks carried by all Ryerson Steel plants



GREENHECK



NEW CENTRIFLO TURBINE VENTILATOR

Its unique feature is the suspension of the rotating unit and bearings in rubber to eliminate noise and vibration—the first in the turbine vent field. Bearing has a basic load rating of 300 lbs., fifteen times greater than the actual bearing load, the load being suspended from the bearing for a stable, balanced condition. Made in sizes from 14" to and including 30". Write for complete details and catalog 12-K.



POWER ROOF EXHAUSTERS

- AXIAL
- CENTRIFUGAL

Designed to meet the demand for high performance and eye appeal at a reasonable price, GREENHECK Roof Exhausters are constructed of heavy gauge aluminum with ball bearing type motor in a wide range of types and sizes. The centrifugal type is the non-overloading backward curve type, sparkproof fan. Write for complete details.

GREENHECK

FAN & VENTILATOR CORP.
SCHOFIELD • WISCONSIN

equipment developments (Continued)

of 25. Units are in $2 \times 1\frac{1}{4}$ in. or $1\frac{1}{2} \times 1\frac{1}{4}$ in. sizes.

Furnace Line

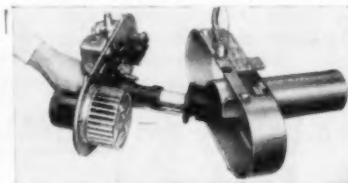
LINE OF gas-fired furnaces rated from 60,000 to 150,000 Btuh in two sizes—Tuck-Aire Furnace Co., Dept. AA, 2045 Evans Ave., San Francisco 24. Featured is "single point suspension" of heat exchanger which is mounted from top of furnace only and is said



to have expansion allowance of over $\frac{1}{8}$ in. "Fuel miser" attachment vents expelled and spilled burned gases. Each burner has separate safety pilot. Bottom filters can be slid into filter racks, dispensing with entry through blower compartment. Furnaces operate with natural, mixed, manufactured or LP gases.

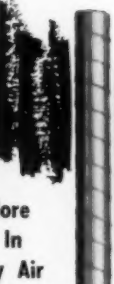
Gas Burner

MODEL G-200 power inshot gas burner with input range of 80,000 to 200,000 Btuh—Nu-Way Corp., Dept. AA, 2416 Fourth St., Rock Island,



III. Featured are: accessible panel construction; cast iron venturi with adjustable primary air gate which

SPIRAL Lockseam PIPE



Specified More
And More In
High Velocity Air
Movement Systems

Rigidly constructed Spiral "Lockseam" Pipe by United Sheet Metal Co. is fast replacing longitudinal-seam pipe in high velocity systems. Seams are locked by a strong 4 ply lockseam . . . pipe interiors are smooth. Rigidity derived from this unique construction results in greater strength, faster installation and reduced job-site costs.

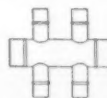
Sizes And Standards For
High Velocity Air—

- 26 gage zinc-coated steel—diameters 3" through 8"
- 24 gage steel—9" through 22"
- Standard length 12'—lengths to 20' if required
- Available in any specified metal 20 to 30 gage.

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United's Spiral "Lockseam" Pipe has been specified and recently installed in over 400 major building projects . . . including hospitals, mines, government, university and commercial buildings, and churches.

Write For Free Catalogue
Showing Detailed Specifications
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MATCHED FITTINGS—
AVAILABLE FOR
EVERY SPIRAL
PIPE DIAMETER

UNITED Sheet Metal Co.

540 S. Drexel Ave., Columbus 9, Ohio

"NOTCHING 16 GAUGE METAL IS A CINCH WITH WISS SNIPS!"



*says Shop Supt. Al Sanning
B. & J. Jacobs Co., Inc., Cincinnati, Ohio*



"The most outstanding thing about Wiss Metal Master 'Aviation' snips is their tremendous cutting power," says Al Sanning.

"Here at the shop we use the M-5 bulldog model almost constantly for notching, nibbling, and cutting shallow arcs in stainless steel and other metal as heavy as 16 gauge.

"Not only are they unquestionably tops for this work, but we also find that age doesn't seem to dull their cutting power. They'll cut perfectly for years."

Mr. Sanning has provided one more reason why superintendents, journeymen, and just about everyone concerned with the sheet metal business prefer Wiss snips. If you use Wiss snips, you doubtless agree. If you don't, give them a try. You can't miss with Wiss!



WISS METAL MASTER "AVIATION" SNIPS

Only 10 inches long. Cut with half the effort of standard 12½ inch snips. Now with colorful vinyl handle grips (available at slight increase in cost). M-1 cuts left, M-2 cuts right ... both make intricate scrolls and circles. M-3 for straight cuts and shallow arcs. M-5 for notching, nibbling and cutting up to 16 gauge metal. Edges serrated to prevent slipping.

MADE BY METAL CRAFTSMEN FOR USE BY METAL CRAFTSMEN

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WISS

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This humidifier really works! No more service problems or call backs with BON-AIR. One model installs quickly on plenum, duct or counter flow furnace! Looks like a million! Works like a charm! See your jobber or write today!

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P.O. BOX 3501 • CLEVELAND 18, OHIO

equipment developments (Continued)

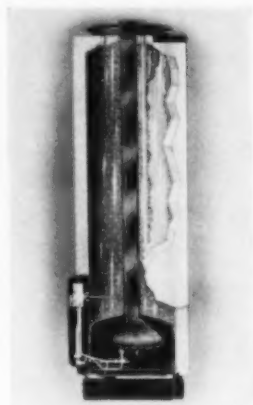
proportions total air volume into primary and secondary air; adjustable input rate by changing orifices; centrifugal switch which shuts off main gas valve when blower is not up to normal speed; pilot safety device; non-aerated single port pilot.

Insulation Hanger

"TUFF-WELD" nylon insulation hangers in two pieces—Goodloe E. Moore, Inc., Dept. AA, 2811 N. Vermillion St., Danville, Ill. Hanger consists of



all-nylon base plate $1\frac{1}{2}$ in. in diameter and a metal spindle in four lengths from $1\frac{1}{2}$ to $8\frac{1}{2}$ in. Spindles are pushed through the base plates and snapped into place just before the two-piece units are to be attached to duct with adhesive.



Water Heater Line

"ARCOSTEEL," "Arcoglas" and "Tabletop" models of gas and electric water heaters in 20 through 80 gal capacities—*American-Standard*

Vitroliner
Leads Again!



FOR ALL FUELS

VITROLINER offers Architects, Project Builders and Building Contractors MORE FLEXIBILITY, CHOICE, SELECTION, QUALITY, and MORE SPECIAL FEATURES than any "prefab" on today's market.

VITROLINER offers MORE TYPES of Chimneys—Type "E" and "L", for ceiling or basement installation. It offers MORE FLUE SIZES for the one CORRECT size, the heating plant requires. There is also MORE permanent basic engineering—and MORE QUALITY MATERIAL, time-tested, tried and proven successful, for over fifteen years.

The Chimney is MORE COMPLETE—Tailor-made to fit the individual job—no cutting or fitting—packaged and shipped direct from the factory. The "KD" Knocked-Down complete Housing Package is MORE quickly shipped from nearby Vitroliner Distributors and Dealers.

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- Lowest installation time.
- Saves floor space in utility room.
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- Choice of flue diameters—6", 7", 8", 10" and 12".
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- Listed by Underwriters Laboratories for all fuels. Approved by building authorities. Exceeds F.H.A. and V.A. minimum construction requirements.

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Sequoia

GAS FURNACES



REV-FLO. Front vent for easy installation. Filters furnished as standard equipment, easily removed from front without disturbing vent connections. Two limit controls. Specially designed multi-blade "floating blowers". Sparkling blue Hammer-oid enamel finish. Pre-wired and ready to install.

"GAMULVINC". Old Indian word. Means "Leader Who Has the Honor." In Sequoia's happy heating ground, each model of forced air furnaces is top-dog in wigwams—every one a leader.

See the new Rev-Flo series, industry standard for counter-flow perimeter heating. The really complete line—75,000 through 187,000 btu. And Sequoia engineering has chipped off more inches in height and depth... with more money-making opportunities to fit Rev-Flo into hard-to-heat floor plans.

Sequoia dealers have happy hunting with the full Sequoia line: The Rev-Flo. The Pacer upflow series in a most complete range of sizes, 75,000 through 225,000 btu. The Closeteer for shallow depth locations. Horizontals to save useful living space and to fit every size requirement. And a complete new line of Basement models—90,000 through 225,000 btu.

Stop stalking around the bush. Join our tribe today.

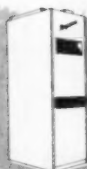
SEQUOIA MANUFACTURING COMPANY

1090 BRITTAN AVENUE • SAN CARLOS • CALIFORNIA

Manufacturers of Upright, Reverse Flow, Horizontal and Basement Gas Furnaces and Air Conditioning



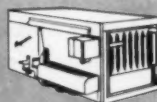
CLOSETEER



PACER



BASEMENT



HORIZONTAL

equipment developments

(Continued)

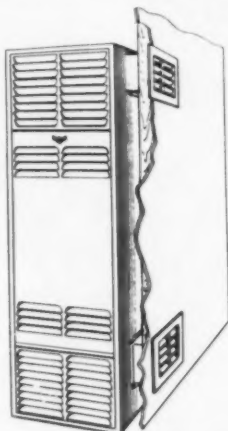
ard Plumbing and Heating Div., Dept. AA, 40 W. 40th St., New York 18. Four models are glass lined; three have "open end" welded galvanized steel tanks. Gas-fired models are available with 20, 30, 40 or 50 gal capacities; electric models are in 30, 40, 52, 56, 66 and 82 gal capacities. Gas-fired models feature automatic shut-off valves, "snap action" thermostats and adjustable pilots which operate with all types of gases. Burners are single-port with horizontal venturi.

Pilot Thermocouple

"SUPER-CLAD" thermocouple designed for greater electrical output—Grayson Controls Div., Robertshaw-Fulton Controls Co., Dept. AA, Long Beach 5, Calif. Unit is interchangeable on all standard pilots. Plating protects copper from heat and prevents oxidation. Unit has 24 cooling fins; contact end is tin plated.

Year 'Round Units

"MODERN BUILDER" year 'round units with gas- or oil-fired highboy and counterflow furnaces and 2 and 3 hp



air or water cooled remote cooling units—Heating and Air Conditioning Div., Stewart-Warner Corp., Dept. AA, Lebanon, Ind. Gas-fired units range from 67,000 to 80,000 Btu input with 2 and 3 hp cooling capacities. Oil-fired capacities range to 67,000 Btu input, also with 2 and 3

hp cooling capacities. Cooling coil can be inserted into built-in plenum chamber at any time. Condensing units are installed remotely. Furnace plenums are integral parts of the units for direct stub duct attachment.

Sliding Motor Base

"ADJUSTO-SLIDE" motor base which can be adjusted to take up or relieve belt—American Pulley Co., Power-Transmission Div., Dept. AA, 4200 Wissahickon Ave., Philadelphia 29. Adjusting screw can be loosened and swung aside, allowing top plate and motor to move far enough to remove old belt and install new one. Die formed top and bottom members are designed to slide freely yet maintain accurate belt alignment. Frame sizes accommodate many motors from 1 to 30 hp. Motor need never be loosened from top plate; base can be mounted vertically, horizontally or inclined.

Central Cooling Units

SELF-CONTAINED central cooling units in two models rated at 2 and 3 hp, for flat roof, through-wall, attic, closet, pitched roof or dormer installation—Thatcher Furnace Co., Dept. AA, Centre St., Garwood, N.J. Designed to reduce air noise, units feature four row condensers and hermetically sealed components.



Cold Water Cooling Unit

COOLING UNIT which operates entirely on cold water without use of compressor or condenser—Hastings Air

The Heating-Plumbing Contractors Mark of Quality

Flu-Bonnet

- Attractive **AND** Functional
- Stops Backdraft **AND** Excess Draft
- Keeps heat inside **AND** Saves fuel

(Amazing pressure-balancing design patented)

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What the well-dressed house is wearing

equipment developments

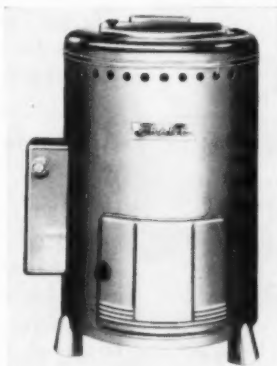
(Continued)

Control, Inc., Dept. AA, 3215 Leavenworth St., Omaha 5. Unit consists of copper water coil, cabinet, humidity pan and filter section; it can be attached to any furnace. Furnace blower draws air through coil, then to house through existing ducts; heat is transferred into water which is discharged into domestic supply or lawn. Unit has no moving parts.

Gas-Fired Incinerator

GAS-FIRED incinerator in two models, featuring heavy aluminized steel incinerator chamber with glass fiber insulation designed to insure fast combustion and retain heat—*Crane Co., Dept. AA, 836 S. Michigan Ave., Chicago 5.* Model for liquefied petroleum gas is rated at 10,000 Btuh; version for natural, mixed or modified gases has 12,000 Btuh capacity. Automatic timer regulates main burner. Featured are safety shut-off, dual purpose pilot with upper flame

which incinerates average daily waste accumulations and lower flame for



igniting main burner to handle larger and less combustible loads, the company states.

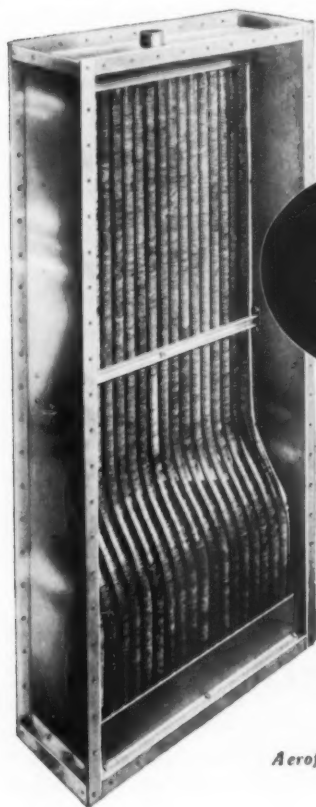
Water Heater

"CRYSTALGLAS" Model 148R 30 gal water heater with 42,000 Btuh input—*Bryant Mfg. Co., Dept. AA, 2020 Montcalm, Indianapolis, Ind.* Unit is said to have 58.8 gph recovery capacity for 60 deg rise, 35.5 gph for

100 deg rise. Glass lined steel tank is tested at 300 lb per sq in. "Saddle-top" design is said to eliminate air pockets in the head; burner is cast iron with radial ports vertically



slotted in burner circumference. Polyvinyl chloride dip tube introduces cold water at bottom of tank. Insulation is glass fiber, according to the manufacturer.



Heating? Cooling? Air Conditioning? Process?

Here's How to
Get the RIGHT Answer to your
HEAT-EXCHANGE PROBLEMS

The right ratio of surfaces—the right materials—the right velocities—the right proportion between coil area and depth . . . there are dozens of factors that affect the efficiency, maintenance and service life of heat-exchange coils.

For best performance in your own application, the practical approach is to take full advantage of the unequalled engineering, research and design skill—the unequalled manufacturing and testing facilities—which AeroFin offers you.

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new literature . . .

Summer Air Conditioning

FOLDER entitled "When You Buy Air Conditioning," prepared by the Cleveland Better Business Bureau in cooperation with the National Warm Air Heating and Air Conditioning Association, can be used by dealers to promote quality installations. The folder lists the four jobs a unit must perform if it is to qualify as an air conditioner; explains the importance of proper installation; points out the factors involved in determining the heat load a unit must handle; and explains why the home owner should be skeptical of claims made by price cutters. Ten easy rules are listed for the home owner's guidance in purchasing a summer air conditioning system—*National Warm Air Heating and Air Conditioning Association, Dept. AA, 640 Engineers Bldg., Cleveland 14.*

Motors

BULLETIN GEA-6424 (superseding GEA-5567c) illustrates design details and shows components in integrated insulation system of general purpose fractional hp motors used in heating and ventilating equipment, compressors and fans. Included are descriptions of production facilities, quality control tests, application

engineering assistance offered by the company, and small motor station plan available for general purpose fractional hp motors. Also being offered is bulletin GEC-1419 covering $\frac{3}{4}$ to 5 hp single phase induction motors for fans, blowers, etc.—*General Electric Co., Dept. AA, Schenectady 5, N. Y.*

Air Cooled Cooling Units

LITERATURE covers air cooled cooling units available in 2 and 3 ton package models and 3 and 5 ton remote types. Features claimed include low operating cost, economical installation and quiet operation. Three folders are available, illustrated with cutaway views showing working parts and drawings giving dimensional information—*Wright Mfg. Co., Dept. AA, 2902 W. Thomas Rd., Phoenix, Ariz.*

Air Velocity Meters

BULLETIN 2448 describes the features of "Alnor Velometer" direct reading air velocity meters. According to the company, the instrument provides a quick, simple check of any air movement in heating, ventilating and air conditioning jobs. Readings are given for both suction and supply air velocities. Also available is a 20 page instruction manual, priced at \$2, which explains how to use the meter for measuring air velocities in large open areas, at supply openings,

Conductor L. Bow says:

Your customers deserve **Cincinnati Elbows.**

They're formed mechanically on automatic machinery, then hot-dipped in zinc for longer rust-resisting life.

Shaped and tapered to fit any standard size pipe.

Your choice of size, angle, and gauge—in copper, aluminum, stainless or galvanized steel. Ask your jobber!



CINCINNATI ELBOW CO.

4730 Madison Road • Cincinnati 27, Ohio

new literature

(Continued)

at suction openings or inside ducts—Illinois Testing Laboratories, Inc., Dept. AA, 420 N. LaSalle St., Chicago 10.

Packaged Air Conditioners

BULLETIN 6125 describes packaged air conditioning units for commercial applications. Design features are detailed and illustrated, and such operating components as cooling coils, fan, fan motor, compressor, condenser and controls are discussed. Among engineering data included are capacity curves, fan performance tables, and recommendations for V-belt drive selection for low, standard and high speed fan operation—American Blower Div. of American-Standard, Dept. AA, Detroit 32.

Direct Fired Heaters

STAINLESS STEEL direct fired heaters are illustrated and described in bulletin F-57A-RO. Available in 10 sizes from 400,000 to 2,000,000 Btu for gas, oil or dual fuel firing, the units are adaptable to free standing or suspended installation and may be used with or without ducts—Reznor Mfg. Co., Dept. AA, Mercer, Pa.

Cooling Towers

FOUR PAGE ILLUSTRATED CATALOG (No. 371) covers "Flow-Cold" cooling towers featuring plastic cooling pack. Included are selection data covering six models in capacities ranging from three through 20 tons and dimensional drawings giving overall unit sizes—Acme Industries, Inc., Dept. AA, Mechanic and Ganson Sts., Jackson, Mich.

Sheet Metal Machines and Tools

ILLUSTRATED DATA SHEET presents information on sheet metal machines and tools including punches, brakes, squaring shears, hand shears, hand notchers, rivet squeezers, pipe crimpers, seamers and others. Copies of the circulars are available printed in Spanish, Portuguese, or French as well as English. One is designed for insertion in salesman's presentation book—Whitney Metal Tool Co., Dept. AA, 91 Forbes St., Rockford, Ill.

Industrial Fans

BULLETIN 400 covers "SP-7" semi-pressure fans designed to provide efficient air moving performance against static pressures normally considered above the range of standard propeller type fans. The fans are available in direct connected, direct driven duct, belt

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INTERNALLY FIRED TORCH with AIR RING heat control



For the first time • A torch that meets all the requirements of the sheet metal trade!

Easy Finger Tip Adjustment • Gives the right soldering temperature for each job.

Concentrated heat • Enables light coppers to do heavy continuous work.

Melts solder • 90 seconds after lighting.

Continuous heat • Available all day.

Saves time • No stopping to change irons or replenish fuel.

Saves money • Operates up to 200 hours on a standard Insto-Gas Cylinder.

Highly Portable • Connects to cylinder with any length Insto-Gas hose.

Safe • No charcoal or gasoline fire hazards.

Two Models • No. 10-S-2 (2 lb. per pr. coppers) and No. 20-S-5 (5 lb. per pr. coppers)

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SOLDERING IRON HEATER

Clean, instant, easily controlled heat for conventional type irons is obtained with Insto-Gas No. 1500 Soldering Iron Heater. Keeps points out of flame and reduces need for tinning. Fits either cylinder or bench type Insto-Gas furnaces.

Use the complete Insto-Gas line — Torches — Furnaces — Cylinders. Available at better Industrial and Plumbing and Heating Wholesalers everywhere or mail coupon today.

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in stock. Special
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one week!



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Here's the filter that practically *guarantees* fast-action, "register-ringing" filter merchandising! Features that *help* you sell, *plus* an established demand, make it a real volume-builder.

You'll *sell* more because the market is already primed and educated on the economy and superior efficiency of new *permanent* filters. You'll make more because the new "A-lum-O-Aire" pricing policy lets you realize a better return while you're meeting and *beating* competition!

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Sounds fine, so far! But what about "minimum quantities," *quotas* and stock requirements? *That's* where "A-lum-O-Aire" tops them all! You *buy* only what you can *sell* and you stock only what you *NEED*! And, you can forget *sizing* problems.

Safe, clean and economical, "A-lum-O-Aire" needs no messy oils or adhesives to catch dirt, dust or lint particles. Revolutionary "A-lum-O" Aluminum Wool does *ALL* the filtering; saves work and worry — washes clean in a jiffy with cold water. Rustproof and fireproof. Approved by Underwriters' (Class 1). Costs less per clean filter than any other and they can be cleaned as often as necessary without sacrifice of efficiency.

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METAL WOOL DIVISION
Dept. A-27
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new literature

(Continued)

driven duct, and extended shaft types. Diameters range from 14 to 60 in.—*Aerovent Fan Co., Inc., Dept. AA, Piqua 2, O.*

Kitchen Ventilators and Hoods

BULLETIN 620N (12 pages) presents information on kitchen ventilators and hoods. Installation data is included—*Trade-Wind Motorfans, Inc., Dept. AA, 7755 Paramount Blvd., Rivera, Calif.*

Metal Working Machinery

"METAL WORKING MACHINERY" (catalog No. 26) describes a variety of shop equipment and supplies, with special emphasis on the requirements of small and medium size metal fabricators. Subjects covered include equipment for bending, grinding, punching, shearing, sawing, welding, forging, drilling, tapping, threading, notching, materials handling, etc. Send request on company letterhead—*Julius Blum & Co., Dept. AA, Carlstadt, N. J.*

Arc Welding

CATALOG 2300 (20 pages) illustrates equipment designed for use in applications of the company's tungsten arc "Heliweld" process. The booklet discusses the advantages of the process and the factors which determine equipment selection. It contains information on various types of manual, semiautomatic, and automatic equipment and on such devices as the arc starter, high-frequency oscillator, control panel, and filler wire feeder—*Air Reduction Sales Co., Div. of Air Reduction Co., Inc., Dept. AA, 150 E. 42nd St., New York 17.*

Forced Warm Air Furnaces

"WIZ" OIL- AND GAS-FIRED forced warm air furnaces designed specifically for development builders are illustrated and described in bulletin F-2631-157. All models — basement, horizontal, counterflow and up-flow — are adaptable for summer cooling—*Stewart-Warner Corp., Heating and Air Conditioning Div., Dept. AA, Lebanon, Ind.*

Electric Motors

HOW TO SELECT, install and maintain electric motors is explained in the two bulletins "How to Take Step Seven" (No. 51X8581) and "How to Make a Motor Go . . . and Go . . . and Go" (No. 51X8582). Presenting the stories of two 20 minute slide color films recently produced by the company, the booklets are

new literature

(Continued)

illustrated throughout with photographs of slides which are accompanied by brief descriptive text—*Allis-Chalmers Mfg. Co., Dept. AA, Box 512, Milwaukee 1.*

Porcelain Enamel Panels

"PORCELPANELS" color chart illustrates porcelain enamel colors available for architectural applications. Thirty-six plain and mottled colors are offered in veneer or curtain wall porcelain enamel—*Ingram-Richards Mfg. Co., Dept. AA, Beaver Falls, Pa.*

Flexible Shaft Machines

SIX PAGE CONDENSED CATALOG (No. 57) describes "WYCO" flexible shafts, flexible shaft machines, saw attachments, hole cutters, etc. Shaft machines listed include single and multiple shafts with hand pieces and motor couplings for direct connection to any motor—*Wyzenbeek & Staff, Inc., Dept. AA, 223 N. California Ave., Chicago 12.*

Automatic Welding Equipment

BULLETIN GEC-1334B includes application information, product features, specifications and illustrations of "Fillerarc" automatic welding equipment for consumable electrode, gas shielded welding—*General Electric Co., Dept. AA, Schenectady 5, N. Y.*

Striking Tools

"TARGETHEAD" striking tools incorporating a feature designed to increase safety and lengthen tool life are described and illustrated in a 26 page brochure. Ask for catalog 57—*Damascus Steel Products Corp., Dept. AA, 2215 Kishwaukee St., Rockford, Ill.*

Air Diffusion Equipment

SIXTY-SIX PAGE CATALOG (No. 1-57) describing and illustrating grilles and registers is designed to aid air conditioning engineers, contractors and architects in the selection of air diffusion equipment. In addition to 32 photographs and 21 drawings, the manual contains selection tables for each of the 26 standard sizes—*Waterloo Register Co., Inc., Dept. AA, P. O. Box 72, Waterloo, Ia.*

Properties of Refrigerants

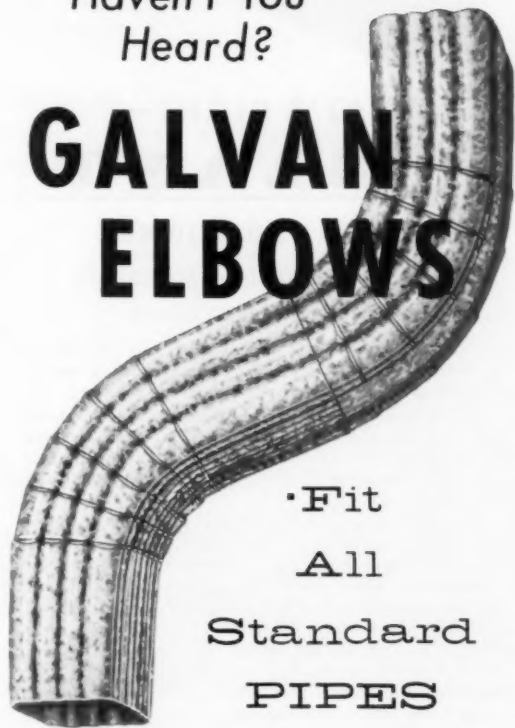
REVISED EDITION of "Properties of Commonly Used Refrigerants" lists four new refrigerants not covered in the previous (1948) edition and has dropped one of the compounds previously listed. The new listings



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CAUZZIN'
ALL THE BUZZIN'?**

*Haven't You
Heard?*

**GALVAN
ELBOWS**



**•Fit
All
Standard
PIPES
PERFECTLY**

GALVAN
MANUFACTURING COMPANY
NEW ALBANY, INDIANA

WHAT! NO STANDBY LOSS?



THAT'S RIGHT— **LO-BLAST** POWER-GAS BURNER

**ELIMINATES THE FUEL WASTE CAUSED
BY UNCONTROLLED DRAFT**

When an atmospheric gas burner shuts off, the rush of draft air through the boiler or furnace carries heat with it up the chimney...causing a serious waste of fuel.

Since a burner is turned on and off several times an hour by the thermostat, a typical heating plant operates only about 2,000 hours of a 6,000 hour heating season. Hence, with an ordinary burner, "standby loss" occurs two-thirds of the time.

In contrast, the Lo-BLAST Power Gas Burner does not depend upon natural draft, but upon air supplied by a small, quiet blower. It provides combustion air *only when the burner is on!* When the burner shuts off, only enough air for pilot combustion is admitted. The heating plant retains much of its heat between operating cycles.

That's why Lo-BLAST Burners average 10% less in operating cost. Capacities of 75,000 to 20,000,000 BTU give complete coverage of residential, commercial and industrial fields.

Send today for complete
information on the
Lo-BLAST Power Gas Burner



Lo-BLAST ECONOMITE
The residential
Lo-BLAST Burner—
capacities 75,000—
500,000 BTU.

**MID-CONTINENT
METAL PRODUCTS CO.**
1960 N. Clybourn Ave., Chicago 14, Ill.

new literature

(Continued)

cover properties of refrigerants 13, 113, 114 and 500. Also listed are refrigerants 11, 12, 22 and 717, which were included in the earlier edition. Methyl chloride has been dropped. The book contains 136 pages, is priced at \$2—*Air-Conditioning and Refrigeration Institute, Dept. AA, 1346 Connecticut Ave., N. W., Washington 6, D. C.*

Metal Roofing

"COP-R-LOY" ROOFING featuring "Channeldrain" lap construction designed to prevent wind and water leaks is described in a four page circular. A keyed diagram shows construction features including end lap, side lap, drain channel and zinc coating. A second diagram illustrates proper application of roof trimmings on a gambrel type roof. Sheets are available in lengths of 6, 7, 8, 9, 10, 11 and 12 ft—*Wheeling Corrugating Co., Dept. AA, Wheeling Steel Bldg., Wheeling, W. Va.*

Instruments and Controls

A DIGEST OF SPECIFICATIONS of instruments and controls is offered in a 12 page condensed catalog. Write for publication 57-687-297—*The Hayes Corp., Dept. AA, Michigan City, Ind.*

Duct and Fittings

DATA SHEET illustrates round duct and fittings for perimeter heating. Shown are applications with universal takeoff only as well as with universal takeoff and box. List prices and an order form are included—*Duc-Pac, Inc., Dept. AA, Baldwin St., East Longmeadow, Mass.*

Induced Draft Fans

BULLETIN S1-102 (superseding bulletin S1-101) describes the features of "Spid" induced draft fans. Included are diagrams giving installation suggestions, selection tables, sample specifications, and line drawings giving dimensional information—*Chicago Blower Corp., Dept. AA, 9867 Pacific Ave., Franklin Park, Ill.*

Steel Press Brakes

CATALOG AL-57 (16 pages) illustrates and describes the principal construction features and gives specifications of "Chicago" press brakes in 30, 36, 50 and 60 ton capacities. Optional features include wide bed and ram for large die area, extension to bed on ram for tubular and similar work, extra deep throat, extra high die space, and special controls. Induction hard-

new literature

(Continued)

ened dies, both special and standard, for all makes of press brakes are also illustrated and described—*Dreis & Krump Mfg. Co., Dept. AA, 7400 S. Loomis Blvd., Chicago 36.*

Flexible Hose and Duct

BULLETIN 70 gives prices and information on flexible hose and "Portovent" duct for use in moving air, dust, fumes and materials. Illustrations include drawings of typical applications; drawings showing how hose may be cut, bent or shaped to fit requirements; and photographs of accessories including screw couplings, cuffs and flanges—*The Flexaust Co., Div. of Callahan Zinc-Lead Co., Inc., Dept. AA, 100 Park Ave., New York 17.*

Mineral Wool Insulation

BOOKLET explains how operating costs for heating and cooling as well as construction costs are reduced by application of thick mineral wool insulation rather than the minimum amount required by FHA. Data for the booklet, which is titled "How Mineral Wool Insulation Reduced Builders' Costs in the Air Condi-

tioned Village," was obtained by Professor John R. Watt of the University of Texas at the air conditioned village at Austin, Texas. The study points out that initial costs were reduced by the discovery that two ton units were sufficient where minimally insulated houses would have required three or four tons of cooling—*National Mineral Wool Association, Dept. AA, 2906 Americas Bldg., Rockefeller Center, New York 20.*

Solder and Fluxes

SIX PAGE MANUAL, "Anchor Solder and Its Proper Application," provides a summary of the origin and uses of the soldering process. Written especially for production personnel involved in soft and hard soldering, the manual describes various types of solder and fluxes, different methods of soldering, basic characteristics of certain metals which give them "solderability" and "conductability," functions of fluxes, etc. A special section is devoted to the soldering of aluminum—*Anchor Metal Co., Inc., Dept. AA, 966 Meeker Ave., Brooklyn 22, N.Y.*

Vibration Control

VIBRATION CONTROL SPECIFICATIONS for air conditioning equipment are presented in bulletin F2C (four pages). Discussed are factors to be considered in se-

WHEN YOU BUY REGISTERS AND GRILLES
LOOK FOR THE **KRUEGER**

"DESIGN-AIR" CARTON

IT'S THE **PACKAGE with the**

PROFIT!



Ask for our new 36 page catalog and the name of your nearest **KRUEGER** Jobber.



Successful dealers everywhere are using the Krueger "Design-Air" line.

Reason: It's the really complete high quality line that's priced right to give you the biggest profits on the market today.

KRUEGER

Air Conditioning Corp.

19 E. RILLITO • TUCSON, ARIZONA

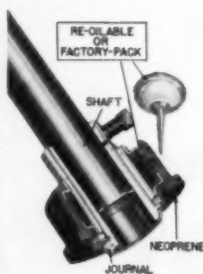
Viking® Blowers



**"Viking's new Mark III Bearing
is really built
for today's blower needs."**

Built-In Journal for Lighter Loading, Longer Life

Mark III runs quieter, longer under today's demands for high-speed, continuous blower operation because its precision-finished journal increases shaft diameter to distribute load over 33-1/3% more bearing surface. Neoprene-cushioned; long-lasting factory-packed lubrication; re-oilable through self-closing membranes. Takes 5/8", 3/4" or 1" shaft (without journal); interchangeable with other bearings 1-13/16" O. D.



New Viking "B" Interchangeable Blower



- First blower to have Mark III bearing with built-in journal.
- First quadruped bearing bracket.
- First all-welded non-flexing high-speed wheels.
- First truly interchangeable blowers to reduce your test time and costs.

Designers: Write on your letterhead for new "Blower Design Kit".

VIKING AIR PRODUCTS

5601 Walworth Ave., Cleveland 2, Ohio

new literature

(Continued)

lecting isolation medium (type of floor, location, type and speed of equipment); isolation media; and installation procedures—*The Korfund Co., Inc.*, Dept. AA, 48-15 32nd Pl., Long Island City 1, N. Y.

Temperature Control Systems

BULLETIN F-2287-4 describes "Electronic" temperature control systems (combining electric and electronic components) for heating, ventilating and cooling applications. Components used in the various types of "Electronic" systems are illustrated and specific applications of each are discussed—*Barber-Colman Co.*, Dept. AA, 1101 Rock St., Rockford, Ill.

Duct and Fittings

CATALOG No. 575 (24 pages) describes furnace duct and fittings for forced air, gravity and air conditioning installations. Illustrated are galvanized round pipe and elbows, wall stack and fittings, galvanized duct and fittings, and extended plenum and perimeter heating fittings. Included is a section on cold air faces, registers, grilles and diffusers. Also illustrated and described are summer air conditioners for offices, stores and restaurants—*Made-Rite Co., Inc.*, Dept. AA, 10th and Monroe Sts., Newport, Ky.

Gas Heating Control

BULLETIN describes model "HC-E" gas heating control for use on gas fired furnaces with ratings up to 200,000 Btuh. The control combines a positive snap-action valve, an electric actuator in place of a solenoid, automatic pilot and built-in pilot filter. The valve actuator is a short, electrically insulated rod made of high strength alloy, designed to expand and contract in response to room thermostat or other switching devices—*Grayson Controls Div., Robertshaw-Fulton Controls Co.*, Dept. AA, Long Beach 5, Calif. or *Acro Div.*, Dept. AA, Columbus 16, O.

Zinc Coated Steel

ZINC COATED STEEL for residential, farm or industrial applications is described in a 12 page booklet. Typical applications illustrated include heating, ventilating and air conditioning ductwork; roofing and siding sheets; and gutters, downspouts and flashing. Ask for "Weirkote" booklet—*Weirton Steel Co.*, Dept. AA, P. O. Box 431, Weirton, W. Va.

Heating and Cooling Products

WHOLESALE BUYERS' GUIDE for 1957 (116 pages) lists parts, tools, equipment and supplies produced by vari-

ous manufacturers for heating and cooling applications. Send request on company letterhead—*Airo Supply Co., Inc., Dept. AA, 2728 N. Ashland Ave., Chicago 14.*

Packaged Air Conditioners

TWO PAGE CATALOG SHEET describes "PAC" air cooled packaged air conditioners. Illustrations include photos of 2 hp "Economy" and 3 hp "Super" models as well as drawings showing typical installations. Specifications and dimensional data are also included—*Thatcher Furnace Co., Dept. AA, Garwood, N. J.*

Warm Air Furnaces

COMMERCIAL STANDARD CS195-57 "Warm Air Furnaces Equipped with Pressure-Atomizing or Rotary-Type Oil Burners" (second edition) is a revision of the previous standard CS195-54. It provides a basis for certification of the quality and performance of warm air furnaces equipped with pressure-atomizing or rotary-type oil burners, both gravity and forced air types, which are marketed by the manufacturer as furnace-burner units and which are installed at clearances from combustible materials as specified in the National Building Code. It also covers some additional requirements for combination units which are intended for both heating and cooling. Copies are priced at 15 cents each—*Superintendent of Documents, Government Printing Office, Washington 25, D. C.*

Air Conditioning Controls

RING BOUND MANUAL — "Replacement Reference No. 1660" — lists air conditioning controls according to application. Each listing provides a description and specifications to enable servicemen to identify the correct control for specific replacements. Dealers purchasing the reference are placed on the company's mailing list to receive supplemental pages as new replacement information and controls become available—*Ranco Inc., Dept. AA, 601 W. 5th Ave., Columbus 1, O.*

Thermostatic Expansion Valve

BULLETIN covers model 214 thermostatic expansion valve for fluorinated hydrocarbon refrigerants no. 12 and 22. Applications for the valve are package type air conditioners, room coolers and central air conditioning systems. Dimensions, valve specifications, recommended applications and charts are included—*A-P Controls, Dept. AA, 2450 N. 32nd St., Milwaukee.*

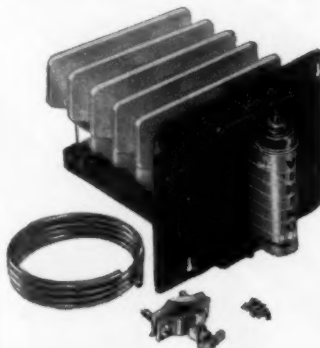
Viking

Humidifiers



"This lifetime guaranteed glass pan on Vikings 5600 Humidifier sells me and my customers."

- Guaranteed Leakproof Glass Pan . . . won't corrode, rust, pit or leak.
- Thirst-Tee Evaporator Plates . . . resist "caking" to insure maximum capillary action.
- Easy to Install . . . comes completely factory assembled with plenum-cutting template . . . just cut hole and insert Humidifier.
- Polyethylene Tubing . . . 10 feet included with each Humidifier. No tools needed . . . it fastens watertight by hand.



Get the Complete
Profit-Packed Story
From Your
Viking
Distributor

VIKING AIR PRODUCTS
5601 Walworth Ave., Cleveland 2, Ohio

we hear that . . .

► THE ANNUAL SALES MEETING of Detroit Controls Corp.'s Chicago regional office was highlighted by the presentation of the residential air conditioning market survey recently completed by E. I. du Pont de Nemours & Co. The presentation was made by Norman Kent, du Pont central district manager. The survey information, pointing up the importance of year 'round air conditioning, was particularly interesting to the Detroit Controls sales force because of the introduction at this meeting of several new control devices for air conditioning and heating. Another feature of the meeting was the talk given by F. G. Coggin, general manager of sales, who discussed overall sales policies of the company and outlined future plans for sales expansion.

► JOSEPH T. RYERSON & SON, INC. plans to increase the capacity of its Pittsburgh steel service plant by more than one-third. Construction is expected to begin this year with completion scheduled in 1958. Cost of the building, machinery, and other operating equipment is estimated at approximately \$1,000,000.

► McQUAY, INC. has entered the prefabricated chimney field and will start producing packaged chimneys this month according to Roy J. Resch, president of the

company. The package chimney division will be headed by Paul C. Van Alstyne, formerly general manager of the Van-Packer Corp.

► THE POWERS REGULATOR CO. has opened a new Chicago office-warehouse building at 6655 Ridge Blvd. The 16,000 sq ft building replaces former offices at 3819 N. Ashland Ave.

► A PLAN FOR DEALERS to finance heating and cooling products has been put into effect by Gibson Refrigerator Co., Div. of Hupp Corp. The finance program, designed to facilitate inventory financing through lending agencies nationally, will supplement the company's existing commercial credit plan and commercial finance plan.

► THE AIRTEMP DIV., Chrysler Corp. has scheduled a three day national business conference for distributors, company executives, regional sales and engineering representatives. In all, more than 400 persons are expected to attend the conference which will be held November 11-13 at the Edgewater Gulf hotel, located between Gulfport and Biloxi, Miss.

► ACCORDING TO STANLEY BERNS, chairman of the board, Pullman Vacuum Cleaner Corp., "Never-Clog" secondary filter bags will now be standard equipment on all the company's commercial vacuum cleaners.

Both

TOP

Quality!



DIAMOND

"There is nothing finer than a DIAMOND"

DIAMALLOY AVIATION SNIPS

The solid forged steel handles, grease-resistant plastic grips, and large hardened pivot bolts, besides other important features, are definitely a new advance in this field.

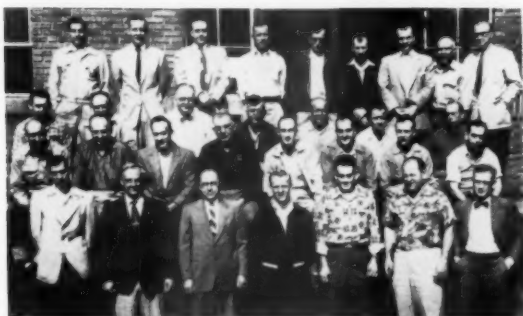
DIAMALLOY WRENCHES

Drop forged of finest steels, have been quality leaders for many years. Made sizes 4" to 24", tapered handles on sizes 15-18-24".

Stocked by leading wholesalers

DIAMOND CALK *Horseshoe Co.*

DULUTH, MINNESOTA • TORONTO, ONTARIO



THE HARRISBURG oil heat training school was repeated to accommodate large number of applicants. These dealers are graduates of the second school

► THE BOSTON SCHOOL OF ADVANCED Oil Heat Training recently conducted classes at Ithaca, N. Y. and Cleveland, sponsored respectively by the Petroleum Div. of the Cooperative Grange League Federation Exchange and the Oil Heat Institute of Northern Ohio. Two schools have also been held at Harrisburg, Pa.

► MUELLER CLIMATROL, Div. of Worthington Corp., has formed a "dealer council" which is designed to provide closer contact between the company and its dealers and speed the exchange of ideas and opinions. Eight dealers, selected from various parts of the country, met recently with company officials to discuss specific product design problems, product trends, public relations for the dealer, product promotion and other subjects of interest to the heating and air conditioning industry. A new group of dealers will be chosen every year.

► MINNEAPOLIS-HONEYWELL REGULATOR Co. reports that last year approximately 75,000 men, representing heating dealers throughout the country, spent some 190,000 man hours at schools sponsored by the company. Purpose of the classes — 2600 in all — was to keep the dealers acquainted with new trends, developments and equipment in the residential heating field.

► LT. COL. JOHN L. MORRISON has been appointed educational director of National-U.S. Radiator Corp.'s recently established air conditioning school.

► FIELD SALES REPRESENTATIVES, regional managers and other members of General Electric Co.'s Weathertron Department recently gathered at New Orleans for a two and a half day sales seminar. H. M. Brundage, general manager of the department, defined the purpose of the seminar as being "to develop solutions to the problems faced by each field sales representative by sharing experiences, ideas and success stories."

LET THE SPECIALIST FROM NATIONAL LOCK HELP SOLVE YOUR HARDWARE AND FASTENER PROBLEMS

The National Lock sales engineer is fully qualified to recommend the "best" hardware for your product line...best in decorative styling...best in functional design...best in quality components. If your requirements call for custom-built hardware, our specialists will work with your designers in creating smart, modern hardware...engineered to cost you less. Write us for full information on how we can be of service to you.

all from 1 source

- CATCHES
- CONTINUOUS HINGES
- KNOBS
- PULLS
- REGULAR AND SPECIAL FASTENERS
- LATCHES
- HANDLES
- CABINET LOCKS
- PLASTICS



NATIONAL LOCK COMPANY
Rockford • Illinois
Industrial Hardware Division

we hear that

(Continued)

► THE HEATING AND COOLING SYSTEM installed in the Monsanto "house of the future" at Disneyland was manufactured by Crane Co. Featured is a "climate control center," an 8 X 8 in. panel equipped to give complete information and control of interior climate for each room of the house. In addition to controls for temperature and humidity are controls for purifying the air, removing pollen, dust and germs; refreshing the air by eliminating undesirable odors, adding the scent of pine, leaves, sea air or flowers; and controlling air circulation in the house. The panel also presents information on outside weather, including temperature, humidity, wind direction and velocity, and the current weather forecast.

► THE AIR CONDITIONING DEPARTMENT of General Electric Co. is celebrating its 25th birthday this year. Formally organized on May 1, 1932, the department produced its first piece of equipment that same year.

► J. WISS & SONS Co. has purchased the property at 228 Burnett Ave., Maplewood, N. J., formerly occupied by the Kroydon Co. A part of the firm's metal cutting snips operation will be moved to the new address.

► WELDALOY PRODUCTS Co. has opened new facilities at Burbank, Calif., which will serve as headquarters for the firm's newly created Weldaloy Western Div.

► CLARKSVILLE, TENN. has been chosen as the site for the Trane Co.'s southern plant. The plant, to cost about \$2,000,000 to construct and equip for production, will manufacture central residential air conditioners for year 'round heating and cooling.

► GERALD NICHOLSON, Miami Air Conditioning, Miami, Fla. accumulated the most prize points in the "Prize Proposal Program" conducted by the Airtemp Div., Chrysler Corp. Prize points were awarded to salesmen participants for each proposal submitted to a prospective cooling or heating purchaser and for each model sold. According to the division, one out of every four proposals develops into a sale.

► DEBOTHEZAT FANS DIV., American Machine and Metals, Inc. is backing up the performance ratings of its fan units with a \$250,000 bond deposited with the New York Trust Co.

► ANSUL CHEMICAL Co. has moved its Philadelphia sales staff into new offices located at 1 Bala Ave., Bala Cynwyd, Pa.

BUCKEYE



PIPES AND FITTINGS



---Ready at a Moment's Notice

"One thing I like about Buckeye Fittings is that they're ready to go out to a job on a moment's notice.

They save time and work around my shop. The only "fitting" I have to do is placing the cartons into my truck. I have more time to make more installations and I'm always sure of trouble-free jobs."

Robert C. Johnstone

Riverview, Michigan

DO A BETTER JOB . . . FASTER . . . SPECIFY BUCKEYE PIPES AND FITTINGS

- Metal seaming adds rigidity to collars and fittings, assures firm, lasting pipe construction.
- Side take-offs are notched for easier connections.
- Special packing for easy identification, handling.
- Buckeye Snap-Tite pipes — save time, labor — just push sections together, edges interlock.

If your local jobber cannot supply Buckeye pipes and fittings . . . contact us directly for the name of your nearest Buckeye jobber.



BUCKEYE
FURNACE PIPE COMPANY
897 Ingleside Columbus 8, Ohio



H. P. MUELLER, SR. and Mrs. Mueller prepare to cut centennial birthday cake

▶ MUELLER CLIMATROL, which is 100 years old this year, recently celebrated the occasion with an open house for employees, customers and others. Highlighting the celebration was the employee banquet, during the course of which Roland Roller, representing the employees, presented a certificate of recognition to the Mueller family.

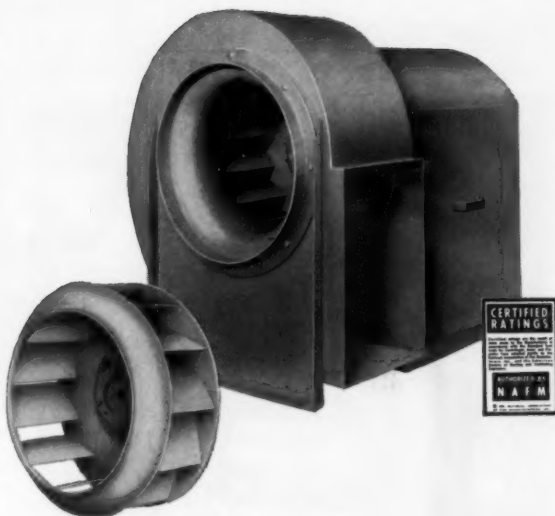
▶ THE BOARD OF DIRECTORS of Robertshaw-Fulton Controls Co. has elected Thomas T. Arden president and John A. Robertshaw, former president, chairman of the board.

▶ WALLACE E. CARROLL, president and treasurer of Simpson Electric Co., was recently awarded an honorary doctor of law degree by the Very Reverend Joseph R. N. Maxwell, S. J., president of Boston College. Mr. Carroll graduated from Boston College in 1928.

▶ PORCELAIN ENAMEL PANELS 4 ft wide by 12 ft high were recently installed on the general office building of U. S. Steel Corp.'s Homestead District Works. According to Ingram-Richardson Mfg. Co., manufacturers of the panels, these are the largest porcelain enamel panels ever used in architecture.

▶ CRUCIBLE STEEL CO. OF AMERICA recently held open house to celebrate the official opening of its new stainless steel sales office and warehouse building located at 3400 Malone Dr., Chamblee, Ga. The warehouse contains 20,000 sq ft of storage area as well as 5400 sq ft of sales office space.

▶ ROBIN A. BELL, vice president of Surface Combustion Corp. and general manager of the Janitrol Heating and Air Conditioning Div., has been elected chairman of the Gas Unit Heater and Duct Furnace Div. of the Gas Appliance Manufacturers Association.

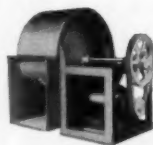


Backward Curve Blowers — Certified Ratings

**Completely Designed, Engineered and
Manufactured by Peerless Electric**

Peerless Backward Curve Blowers are all Peerless—motor and all. We control the entire production of this versatile blower, from drawing board to finished product. We guarantee it unconditionally for quiet, trouble-free operation.

Peerless Backward Curve Blowers can be specified with confidence. They are thoroughly tested according to test codes. They meet NAFM and NEMA standards. Scores of them are operating in schools, churches, hospitals and government installations.



FORWARD CURVE BLOWERS

Made entirely by Peerless; arc-welded housings and frames; wheels designed for quieter operation; dynamically balanced.

CENTRIFUGAL ROOF VENTILATORS

Matching wheel cone accurately fits spun venturi for quieter, smoother air movement. All welded construction; material 16 ga. or over. Each unit air tested, and rated to assure certified PFMA ratings. Fits standard curbs.



See our Catalog in Sweets

Write for Bulletins SDA-220, SDA-200, SDA-160

**Peerless
Electric**

Charter Member of The Air Moving and
Conditioning Association, Inc.

FAN AND BLOWER DIVISION

THE Peerless Electric COMPANY
FANS • BLOWERS • MOTORS • ELECTRONIC EQUIPMENT
1405 W. MARKET ST. • WARREN, OHIO



MORE THAN 3000 PUPS were sent to dealers as part of kit used in "Name the Bryant Pup" contest. H. L. Clary, Bryant vice president and sales manager, helps Zorita DeJarnette tally the stock

► BRYANT MFG. CO. has brought back the Bryant pup to serve as its trademark and to spark the "Name the Pup" contest recently conducted by the company. Dealers as well as the general public were eligible to participate in the contest.

► DEALERS FROM THE ROCHESTER, N. Y. area recently attended a "Cool School," conducted by Delco Appliance Div. of General Motors Corp. at division headquarters. The school covered installation, operation and maintenance of residential cooling equipment. Following the Rochester meeting, service engineers James Turner and Paul Brady, accompanied by Gordon H. Diehl, divisional engineer in charge of heating and cooling application engineering, took off on a 5000 mile trip through the South to conduct similar schools. Cities on the schedule include Jacksonville, West Palm Beach, St. Petersburg, and Orlando, Fla.; Raleigh, N. C.; Roanoke and Richmond, Va.; and Washington, D. C.

► FOUR NEW OFFICERS have been elected by Premier Co. They are E. V. Coulter, president and general manager; Gordon L. Bowman, vice president and general sales manager; William E. Westerdahl, secretary; and C. A. Halverson, Jr., treasurer.

► CONSOLIDATED DIESEL ELECTRIC CORP. has acquired the business and assets of the Lima Electric Motor of Lima, Ohio.

► STOCKHOLDERS of International Metal Industries, Ltd., Toronto have voted to change the firm's corporate name to John Wood Industries, Ltd.

**In the New York market
...where price is
an important factor ...
and rigid building
codes exist...
Empire Ventilators
outsell all others.**



Sold thru
leading
wholesalers.
See your
jobber.

Empire Ventilation Equipt. Co.

**35-39 Vernon Boulevard
Long Island City 6, N. Y.**

wholesaler doings...

► THE HEATING EQUIPMENT CENTER, New Haven, Conn. wholesaler, recently completed a series of four meetings designed to provide dealers with information on such subjects as sales and sales promotion, management, and law and finance as they pertain to the heating industry. The meetings were held at Strathcona Hall, Yale University. Speakers included C. S. Stackpole, executive secretary of the American Gas Association, who discussed "Old Fashioned Selling Brought Up to Date," and C. W. Nessell, who covered the subject of "Prospecting."

► GRAND FURNACE CO. has been named distributor in Grand Rapids, Mich. for Lima Register Co. Robert Friestad is head of the Grand Furnace Co., which is located at 1361 Grove Pl., N. E.

► THE BAYONNE PLUMBING SUPPLY CO., Bayonne, N. J., distributor for American-Standard's Air Conditioning Div., recently held a sales and promotion meeting for dealers in the northern New Jersey area. Over 300 dealers attended the meeting to learn about sales features of summer, winter and year 'round air conditioning equipment and to hear details of the division's consumer advertising campaign. Other distributors throughout the country are holding similar meetings for their dealers.

► ATLAS SUPPLY CO., Winston-Salem, N. C. has been named to handle distribution of Rheem water heaters in the Southeast. Following the appointment, a series of special sales training meetings for members of the Atlas firm was conducted by Rheem marketing executives. Separate meetings were held for each of the Atlas branches — in Raleigh, N. C.; Atlanta, Ga.; Charlotte, N. C.; and Columbia, S. C. — as well as at headquarters in Winston-Salem.

► THE SATTERLEE CO. has been named a distributor of Niagara presses, press brakes, shears, etc. in Minnesota and northwestern Wisconsin. Main offices and showroom of the Satterlee firm are at 2200 E. Franklin Ave., Minneapolis 4.

► SOUTHERN PIPE & SUPPLY CO., INC. is the new distributor for Mississippi of "Rheemaire" central air conditioning equipment. To handle distribution, a new department has been created with J. E. O'Flinn, Jr. in charge.

► ELLWOOD C. MYERS has been named president of Sid Harvey Supply Inc., a newly formed company wholly owned by the Sid Harvey Companies. The new company will purchase in bulk all of the new oil and gas replacement parts that are stocked in the 47 facilities of the Sid Harvey Companies. Headquarters

your customers expect
the BEST—
**GIVE IT
TO THEM!**



OHIO VALLEY

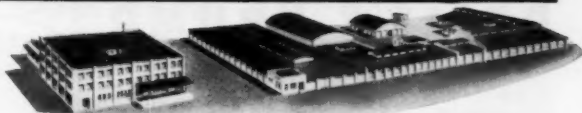
Furnace Fittings

Old-fashioned "home made" fittings don't meet modern standards. Your customers expect more for their money today, and Ohio Valley fittings provide it... precision and highest quality.

**DO IT BETTER, FASTER—
WITH OHIO VALLEY**

Carried in Stock by Leading Wholesalers

Catalog now available... get it from us or from your wholesaler



Ohio Valley Hardware Co., Inc.

Manufacturing Division
Evansville 2, Indiana



wholesaler doings

(Continued)

will be in Valley Stream, N. Y. Other officers are Sid Harvey, chairman of the board, and Stephen R. Harvey, vice president.

► **HARRIS SUPPLY Co.**, Grand Rapids has been named to handle distribution of self contained residential and commercial air conditioning equipment by the Mercury Air Conditioning and Heating Div., Lord and Palmer, Inc. The Harris firm, headed by Clarence W. Harris, maintains branch distributors in Lansing and Kalamazoo. It will service the western Michigan trading area.

► **C & S EQUIPMENT Co.**, Los Angeles has been named representative in southern California for Drayer-Hanson Div. of National-U.S. Radiator Corp.

► **THE SERVICE PARTS Co.**, 2511-2611 Lake St., Melrose Park, Ill. has been appointed wholesale distributor for the Hydraline Products of the York Div. of Borg-Warner Corp.

► **NORTH AMERICAN NATURAL GAS SERVICES, LTD.**, Calgary, Alberta will handle distribution of gas furnaces and air conditioning equipment in Canada (ex-

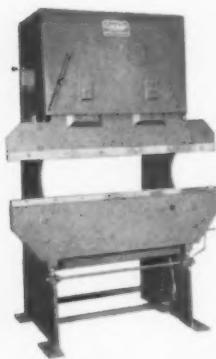
cept British Columbia) for Fraser & Johnston Co. The Canadian firm is headed by L. C. Farmer as president.

► **THE NOLAND Co., INC.** has been named to handle distribution of Niagara Machine & Tool Works products in Georgia and Tennessee. Headquarters of the Noland Co. are at 301 W. Eighth St., Chattanooga. Branch offices are located in Atlanta, Augusta, Decatur and Marietta, Ga. as well as Johnson City, Memphis and Nashville, Tenn.

► **BROWN ROBERTS HDWE. Co.**, Alexandria, La. has been appointed a distributor of "Rheemaire" central air conditioning equipment in the Shreveport, Alexandria, Lafayette and Lake Charles trading areas.

► **FIFTEEN OKLAHOMA DEALERS** recently visited the Tyler plant of General Electric Co.'s Home Heating & Cooling Dept. The dealers were brought to Tyler under the sponsorship of Tom Dolan Heating Co., Oklahoma City distributor for the department.

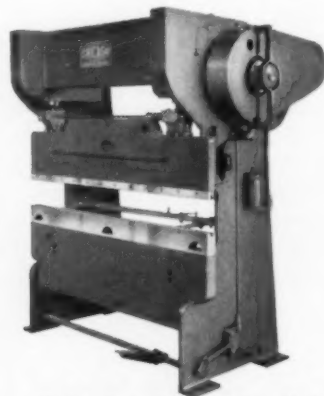
► **PERFECTION INDUSTRIES Div. of Hupp Corp.** has appointed six new distributors to handle heating and cooling equipment in New York State, Florida and California. The new wholesalers and their territories are: Jordan Supply Co., 95 Elm St., Buffalo — Buffalo-Niagara frontier area; R. D. Marshall Co., N.



Model 131 Press Brake
11 Ton Capacity

Cut Production Costs on...

BEADING
BENDING
BOX and PAN FORMING
CHANNELING
CORRUGATING
CURLING
FLATTENING
HEMMING
JOGGING
MULTIPLE PUNCHING
NOTCHING
OFFSETTING



Models A, B, C, and L Press Brakes
Advanced Design — 30 to 60 Ton Capacities

PRESS BRAKES

11 to 60 Ton Capacities for Sheet Metal Work

Complete recommendations for any job on request.

6094

DREIS & KRUMP
MANUFACTURING CO.
7404 S. Loomis Boulevard, Chicago 36, Ill.



PRESS BRAKES • HAND AND POWER BENDING BRAKES
STRAIGHT-SIDE PRESSES • INDUCTION HARDENED DIES
SPECIAL METAL-FORMING MACHINERY



Smith's 180° Universal Brake is the answer to the need for one low cost tool that can handle a wide variety of bending and forming jobs with speed and accuracy. Designed to permit selective bending of portions of a workpiece without restriction, the Universal Brake's application and use is literally unlimited. It will handle 18 gauge mild steel 26" wide to 7 gauge 1 1/4" wide, at any angle, up to 180° in one operation. It has adjustable angle stops and back gauges to assure precise duplication of work pieces, making it a very valuable production tool. Write for illustrated circular and more details.

U.S. Patent No. 2,651,349
1124 ELIZABETH AVENUE
WAUKEGAN, ILLINOIS

R. E. SMITH



Developed by a famous name in heating—Banner Burner—for oil-to-gas conversion the OG-56 is superior in design and construction . . . installs quickly, easily and profitably. Now being manufactured with these outstanding advantages:

EASY TO INSTALL—fits through four-inch oil burner sleeve!
ONE PIECE CAST IRON CONSTRUCTION of venturi and flame spreader—will not burn out.

M. H. CONTROLS—available in Powerpile or 24-volt system. An example of the quality components throughout.

Write for complete details.

BANNER BURNER CO.

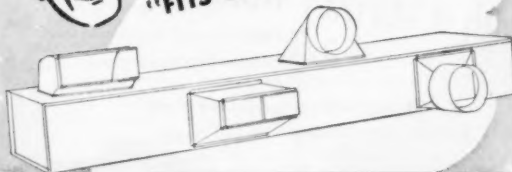
227 EAST INDIANOLA AVENUE • YOUNGSTOWN 7, OHIO

"SAVES YOU MONEY"



"EASY TO ASSEMBLE"

"FITS and LOCKS TIGHTLY"



SEND FOR
New
CATALOG

Standardized DUCTS and FITTINGS

MONCRIEF offers a complete line of Prefabricated pipe and fittings for any type of Heating or Cooling system. All precision made, at low mass production cost. Prompt shipment from Atlanta Factory makes MONCRIEF the South's most dependable source of supply on Duct Work, Registers, Grilles and Diffusers. Save time and money by ordering from your jobber TODAY.



Moncrief

FURNACE COMPANY

P. O. BOX 1673

ATLANTA, GEORGIA

AIR CONDITIONING is our SPECIALTY

Refrigeration and Electric Motors, Too!

OVER 10,000 ITEMS...

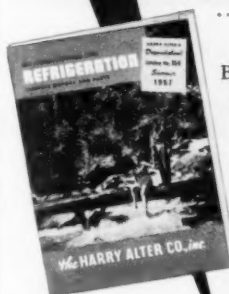
the world's most comprehensive listing of parts and supplies

... appear in the
Harry Alter
DEPENDABLE
BOOK No. 166
Summer, 1957

complete with illustrations, descriptions, prices and other useful information.

SAVE MONEY, time and effort by ordering the parts you need from this compact, easy-to-read, up-to-date catalog.

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DEPENDABLE BOOK



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**PARTS
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Supplies**

The HARRY ALTER CO., Inc.

1717 S. Wabash Ave., Dept. G, Chicago 16, Ill.

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134 Lafayette St.
New York 13, N.Y.

122 Parkhouse St.
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Bldg. B, Unit 8
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Cut ANY Shape in Metal...

with a BEVERLY THROATLESS SHEAR!

- Capacities to 3/16" in mild steel
- Make clean, knurl-free cuts in any metal to capacity
- High Carbon High-Chrome Blades
- Built to last a lifetime



Here's What a Beverly Can Do!

Cuts made in 18 ga. metal with Model B-1

Beverly Shears are the most versatile metal shearing tools you can use. Unique shoulder design permits any cut... rack and pinion gives great power with little effort. Alloy steel body for maximum rigidity and strength. Made in 4 models.



Model B-3 with Ball Bearing Hold Down

Write for illustrated circular — or see your Beverly Distributor.

Beverly SHEAR MFG. CO.
3020 W. 111th Street Chicago 43, Ill.

Kirk & Blum THE BLOW PIPE SUPPLY HOUSE

- ONE-PIECE BLOW PIPE ELBOWS
- BALL JOINTS • HOODS
- FLOOR SWEEPS • FLEXIBLE TUBING
- CUT OFFS • ANGLE RINGS
- CYCLONE COLLECTORS & SUPPORTS

From one source you can get all types of blow pipe parts and components... made in production quantities by Kirk & Blum.

Depend on K & B manufacturing experience for superior blow pipe parts at less cost than hand made parts.

Write for new Bulletin No. 1356

THE KIRK & BLUM MFG. CO.
3180 Forrer St., Cincinnati 9, O.



wholesaler doings

(Continued)

Pearl & Van Voert Sts., Albany — Albany area; Coleman Electrical Co., 354-36th St., Brooklyn — Brooklyn territory; Lincoln Supply Co., 109-115 Otsico St., Syracuse, N. Y. — Syracuse and surrounding area; Ace Refrigeration Supplies, Inc., 46 N. W. 36th St., Miami, Fla. — Miami area; Harry F. Haldeman, Inc., 2401 S. Hill St., Los Angeles — southern California.

► REFRIGERATION DISTRIBUTORS CORP., Salt Lake City wholesaler, recently moved into a new building containing 14,260 sq ft of floor space. To celebrate the occasion, the firm held open house for heating and cooling dealers in the Salt Lake City area as well as architects, engineers and representatives of manufacturers. A General Electric "Weathertron" heat pump provides heating and cooling for the office area. Located in the display room, the unit's metal front has been replaced by a transparent plastic window which allows customers to view the machine in operation.

► DALLMAN Co., San Francisco distributor, will cover the northern California area for Mitchell Mfg. Co. Verl Taylor is executive vice president of the Dallman firm, which is located at 7th and Townsend Sts., San Francisco.

► PEERLESS PACIFIC Co., 2238 N. Interstate Ave., Portland, Ore. will handle distribution of air conditioning equipment for Typhoon Air Conditioning Co., Div. of Hupp Corp., in Washington, Oregon and Idaho. The Peerless firm has its main offices in Portland, Ore. and maintains branches in Eugene, Ore. and Kennewick, Wash.

► THE BLAKE THOMAS Co., a new firm located in Effingham, Ill., has been appointed a distributor of air conditioning products by the Recold Corp. The Blake Thomas Co. will serve Kansas, Missouri, southern Illinois and southern Indiana. H. Blake Thomas is owner of the new company.

► WINTHROP SUPPLY Co. has been appointed a distributor of Rheem heating and cooling equipment in the Indianapolis trading area.

► THE FAMOUS FURNACE Co. of Cleveland, Ohio has been appointed air conditioning distributor by the Mercury Div. of Lord and Palmer, Inc. Famous Furnace will cover northeastern Ohio as well as parts of West Virginia and Pennsylvania.

► FRIDLEY BROS., St. Louis, Mo. has been appointed a distributor of room air conditioners by Mitchell Mfg. Co. The Fridley company will serve dealers in the St. Louis trading area which includes eastern Missouri and southern Illinois below Springfield.

merchandising ideas

► **DICK PARSONS**, Armstrong Furnace Co. dealer, promotes his heating business while enjoying his hobby — iceboating. On each side of his enclosed iceboat Mr. Parsons has placed a decal identifying himself as a warm air heating dealer. When not in use for sport, the iceboat sometimes serves as a handy vehicle for making service calls.

► **AVAILABLE TO DEALERS** of Thermo-Products, Inc. is a truck for use in demonstrating equipment at fairs, heating shows, etc. On the bed of the truck are mounted gas and oil fired winter air conditioners. The truck operates in the South in the winter months and in the Midwest during the summer period. The two units on the truck are changed periodically and three units can be featured.

► **ARMSTRONG FURNACE CO.** has developed a sales promotion program designed for use by dealers to help builders sell more homes. Included in the material offered to builders for use in promoting their homes are brochures, signs, newspaper ads, fact cards, etc. While the primary aim is to provide a merchandising service for builders, a secondary target is to get the builders and dealers better acquainted.

► **DISKS THAT CARRY** advertising messages or slogans and are designed to fit into the front wheels of cars or small trucks are available from Auto Ad Disk Co., 812 Melrose Ave., Trenton 9, N. J. According to the manufacturer, the eye-catching quality of the device is that the disk appears to remain stationary even while the vehicle is in motion.

► **"THE HOSPITALITY CENTER,"** a new retailing service designed to put the customer in a buying frame of mind, is offered to dealers by Mitchell Mfg. Co., Div. Cory Corp. Featured is a beverage bar which individually dispenses servings of coffee, tea, hot chocolate and soup.

► **HEATING DEALERS** are offered a sales tool in a plan developed by Trion, Inc. manufacturer of electronic air cleaners. The Trion firm offers, through its dealers, to install the cabinet in the ductwork of the heating system at the time a house is being built. Thus it will be in position when the owner, at some later date, might choose to buy the operating unit, which can then be inserted in the cabinet without alteration to ductwork.

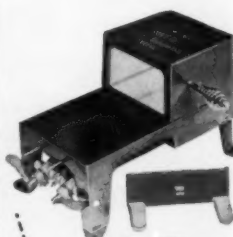
► **THOR POWER TOOL CO.** is conducting a "man of the month" contest among its salesmen, with awards going to representatives who achieve outstanding sales records. Winners receive U. S. savings bonds.

High, efficient heat

johnson
Bench Furnaces for soldering coppers, heat-treating, tempering, annealing, case-hardening

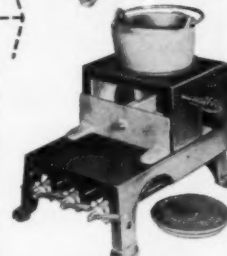
No. 101

A powerful, economical bench furnace for any carbon steel tool or small metal parts work. No blower is needed, hence no muffle. Johnson patented curved hood forces return blast over work. Equipped with baffle plate, shut off valve and pilot light. Firebox 3 $\frac{3}{4}$ " by 4 $\frac{1}{2}$ " by 5 $\frac{1}{2}$ ". 13,000 BTUs per hour per burner.



No. 118 Combination

Ideal for all around shop use. Has 22-lb. capacity melting pot for soft metals such as lead and babbitt. Shelf in rear of firebox supports and protects points of soldering coppers. Johnson patented curved hood. Refractory lined firebox 6 $\frac{1}{4}$ " by 5" by 6 $\frac{1}{2}$ ". 13,000 BTUs per hour per burner. Baffle plate maintains heat and even temperature.



Write today for free Johnson Catalog

Johnson Gas Appliance Company
580 E Avenue NW, Cedar Rapids, Iowa

johnson
If it burns gas lock to Johnson
Since 1906



FOR WINTER HEATING



AND SUMMER COOLING E-Z-ON DAMPER REGULATORS

Slide this 16 gauge steel regulator over the scribed center line. Just one hammer blow drives the sharp prongs through damper. That's all! No rivets — no drilling — no screws — E-Z-ON saves up to 60% dampers make-up time yet actually does the job better . . . saves you money, too.

save installation
time and money

E-Z-ON INDICATOR HANDLE gives you a head start in air conditioning installation. Makes for simple damper changing from winter to summer setting. Clearly shows damper position.

M. A. GERETT CORP.

724 W. Winnebago St., Milwaukee 5, Wis.
all leading jobbers stock E-Z-ON
Stocked in Canada by THERMIDAIRE CORP., 7-9 Cumberland St., Toronto

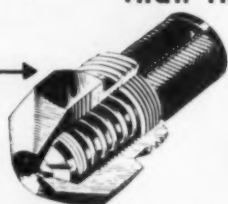


*I give Expert Service
and I use...*

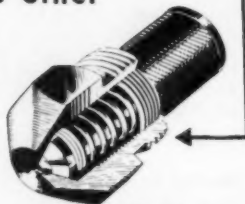
APTHORP TRUE ALIGNMENT

NOZZLES

BOTH ARE PERFECT
but one may be **BETTER**
for a **PARTICULAR BURNER**
than the other



HOLLOW SPRAY



SOLID SPRAY

Every burner has a certain air pattern that is governed by the design of its particular head. Either an Apthorp Hollow Spray or Solid Spray Nozzle will mate best with this air pattern. By use of the right type, CO₂ will increase from 2% to 4%.

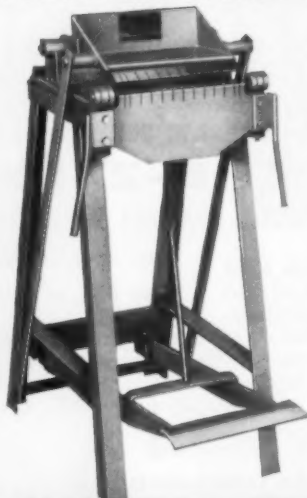
"My Customers appreciate the DIFFERENCE!"

For details, write to:

**BOSTON MACHINE
WORKS COMPANY**

Oil Heating Supplies Div.
7-17 WILLOW STREET
LYNN, MASSACHUSETTS

BEND DRUM RETURN FOR LETTERS FASTER!



$\frac{3}{16}$ " SLOTS
 $\frac{3}{4}$ " DEEP ON
1" & $\frac{1}{2}$ " CENTERS
ACCOMMODATE
SEAMED & FOLDED
DRUM RETURN

CLAMPING BY
FOOT TREADLE

CAPACITY 20 GA.
INCLUDING
STAINLESS

HEIGHT 39"

WEIGHT ONLY
150 LBS. FOR
EASY MOVING

WHITNEY-JENSEN NO. 99
Letter Forming Bending Brake

WHITNEY METAL TOOL COMPANY
702 Forbes St., Rockford, Ill. Since 1910

appointments...



Clive C. Earle



James E. Burke

► **CLIVE C. EARLE** as sales manager for the Buffalo plant of Joseph T. Ryerson & Son, Inc. Mr. Earle was formerly manager of alloy and stainless steel sales at the company's steel service plant in Pittsburgh. He is being succeeded in that capacity by James E. Burke, formerly alloy and stainless steel sales representative at the company's Chicago plant.

► **C. J. RYAN** as assistant to the vice president, sales, of Crucible Steel Co. of America. Mr. Ryan was formerly manager of the company's Detroit sales branch, in which capacity he is being succeeded by M. J. Dempsey, former assistant branch manager.

► **D. H. HANNASCH** as manager of Minneapolis-Honeywell Regulator Co.'s branch sales office in Charlotte, N. C. He succeeds L. Frank Lawrence, Jr., who has been transferred to Cocoa Beach, Fla. in a new sales assignment dealing with the company's government contracts. Mr. Hannasch has held various sales positions in Minneapolis, Omaha and Rochester and has been district sales manager in Greensboro since 1954.

► **L. J. RATHBUN**, Peoria, Ill., as representative for the state of Illinois for Maid-O'-Mist, Inc. C. Victor Hanson, Minneapolis will cover Iowa and Nebraska.

► **H. L. BALTHAZAR** as assistant sales manager, domestic water heaters, for the Permaglas Div., A. O. Smith Corp. V. H. Swearingen succeeds Mr. Balthazar as supervisor of marketing services.

► **FLOYD H. AARVIG** as district sales manager of District No. 16 (comprising parts of the states of Kansas, Missouri, Illinois and Kentucky) for Century Engineering Corp.

► **ROBERT G. WATKINS** as district manager in Michigan for Armstrong Furnace Co.

► **GEORGE D. WOOKEY** as a regional sales manager for Mueller Climatrol, Div. of the Worthington Corp. Mr. Wookey will be responsible for the activities of sales representatives in California, Arizona and Nevada.

appointments

(Continued)



Al Jevons



Charles E. Rihl

► **AL JEVONS** as a sales representative for Lima Register Co. He will have headquarters in Feeding Hills, Mass. Charles E. Rihl has been appointed district sales representative in the Philadelphia territory.

► **FRED W. ULREICH**, Chicago, as a representative of Great Western Steel Co. in northern Illinois. He was formerly associated with Bethlehem Steel Fabrication Div., Chicago, and with the Republic Steel Corp.

► **LEO S. PAYNE** as manager of the newly established Mobile, Ala. sales engineering office of American Blower Div. of American-Standard. The new office is located at 461 Government St. The company has also opened a new branch sales engineering office in Miami, Fla., which will be headed by W. G. Harward as branch manager. The Miami office is located at 220 Miracle Mile.

► **REUVEN N. PLATT** as assistant sales manager for the states of Illinois and Michigan for Rolled Steel Corp. He joined the firm in 1952.

► **HARRY G. DUVAL** as Virginia representative for Remington Air Conditioning Div., Remington Corp.

► **THE STEEL AND ENGINEERING PRODUCTS CO.**, El Paso, Texas as sales representative for New Mexico and part of Texas for J. F. Pritchard & Co. of California.

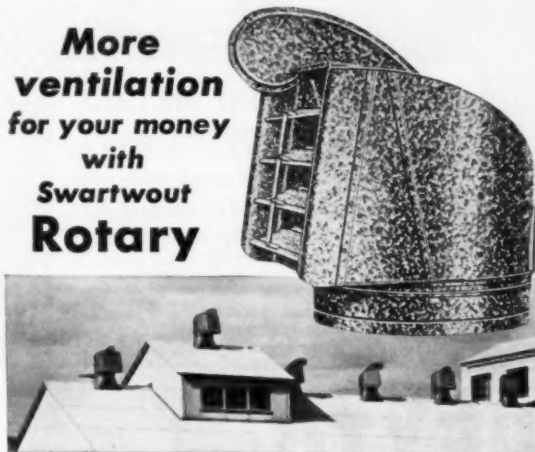
► **BERYL MARTIN JOHNSON** as a member of the service staff working out of the Columbus office for Wheelco Instruments Div., Barber-Colman Co. J. Richard Manier has joined the sales engineering staff of the division's Cleveland office. Clemens Matula has joined the Chicago sales engineering staff and Otto Schemmel has been added to the Chicago office's service engineering staff. Other new service engineers are Marion L. Jones, Grand Rapids; Lloyd J. Austin, Los Angeles; and George F. Draper, Barber-Colman Ltd., Toronto. James P. Whitehead, former sales engineer of the Toronto office, is now branch sales manager of Barber-Colman Ltd. in Montreal.

HANDY PIPE-

in addition to helping you keep costs down on every job - is your assurance that it will serve well and outlast the buildings in which it is installed.

F. Meyer & Bro. Co.
Peoria, Illinois.

More ventilation for your money with Swartwout Rotary



You can use the Rotary in hundreds of places for efficient dependable ventilation. Its design permits unhampered air-flow and greatest capacity per size of roof opening. Mounted on stainless ball bearings, head swings with slightest change in wind direction — keeps opening away from wind to take full advantage of suction effect. Industry's favorite "spot" ventilator for half a century. Write for Bulletin R-3

The Swartwout Company, 18511 Euclid Ave., Cleveland 12, Ohio

Swartwout ROOF VENTILATORS AND VENTILATING LOUVERS

ALSO AUTRONIC PROCESS CONTROL EQUIPMENT



ORNAMENTS

STAMPINGS & SPINNINGS

Zinc Ornaments Available From Stock. Copper, brass, bronze, aluminum and stainless steel ornaments made up promptly.

If you don't have catalog K, send for it NOW.

MILLER & DOING

89 ADAMS STREET

BROOKLYN, N. Y.

ALLEN SODER-FLUXES FOR STRONGER JOINTS

For Soldering — Brazing — Welding



You can get a complete line of SODER-FLUXES from Allen for soldering, brazing and welding all metals.

L. B. ALLEN COMPANY, INC.
9302 Berenice Schiller Park, Ill.

—Metropolitan Chicago—

PERFORATED METALS

for all industrial uses

ARCHITECTURAL GRILLES

Illustrated Catalogs give complete information

Diamond Manufacturing Co.

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West Coast Plant, Diamond Perforated Metals Co.
17915 So. Figueroa St., Gardena, Cal.
Los Angeles Area

PEXTO

COMBINATION ROTARY MACHINE

With a variety of interchangeable rolls, this combination machine handles turning, burring and wiring... also elbow edging and flanging. Will feed and gage for either direction. Like all Pexto products they're right for the experts... best for the learners. Write today.



Complete line of machines and tools for Sheet Metal work.

THE PECK, STOW & WILCOX COMPANY, SINCE 1885 SOUTHINGTON, CONNECTICUT, U.S.A.

appointments

(Continued)



Don Gibson



John Q. Woodruff

► DON GIBSON as district sales representative for John Wood Co.'s Heater & Tank Div. He will be responsible for coordinating divisional sales and promotional activities in the Cleveland area. John Q. Woodruff has been named manufacturers' agent handling automatic water heaters and "Fluid Heat" heating equipment. He will represent the division in Utah, Montana, Nevada, Idaho and western Wyoming.

► ALBERT E. LAND, JR. as a member of the sales organization of Rheem Mfg. Co. He will work with wholesalers and their dealers in the distribution of furnaces and central air conditioning equipment in Oklahoma, New Mexico and parts of Texas.

► W. F. COUNTRYMAN, JR. as water heater sales representative for the Plumbing and Heating Div. of American-Standard. Mr. Countryman will work out of the division's Pittsburgh office. Other newly appointed water heater representatives and their headquarters offices are: Archie T. Hutson, Silver Spring, Md.; P. B. Skillen, Detroit; R. A. Drennan, Chicago; J. F. Mulcahy, Kansas City, Mo.; W. H. Evans, Boston; M. R. Scheiber, New York City; B. L. Miraglia, Newark; H. R. Quinn, Philadelphia; and Richard Gurley, Dallas.

► DALE WEITMAN & Co., as representative for Marlo Coil Co. in the Beloit, Wis. area. The Weitman firm will handle the sale of air conditioning and heat transfer equipment.

► R. E. CHASE AND Co., INC., with offices in Seattle and Tacoma, as sales representative for "PurAir" equipment in part of the state of Washington for Barnebey-Cheney Co.

► FRANK WALSH, formerly of Hi-Qua Mfg. Co., Inc., as sales manager for the newly formed Gas and Electric Water Heater Div. of Patco Mfg. Co.

► WILLIAM P. MACKLE, Donald W. McAlpine and Mark Stites as district managers for the Air Conditioning Div., Whirlpool Corp. Mr. Mackle, who for-



leading
architects
specify:

Nixalite BIRD BARRIER AND REPELLENT

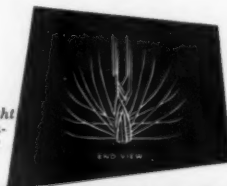
The architect is naturally concerned with preserving the beauty of his own creations. He realizes, too, that building owners lose millions yearly from corrosive damage caused by bird excreta. Costs are sky-highed by rubbish-clogged drains and gutters, lice and litter. Architects choose Nixalite for bird-free stain-free buildings. Inconspicuous Nixalite functions as an integral design component blending naturally with structural features—permanently effective, yet easily removed. Nixalite's needlesharp stainless steel points (10 per inch) keep 'em flying. Lasts a lifetime, yet pays its way in just one year.



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for
introductory
folder

8

pages in Sweet's Architectural, Light Construction, and Industrial Construction Files, and in Building Specialties Manual are devoted to Nixalite.



NIXALITE COMPANY OF AMERICA
115-119 W. 3rd Street Davenport, Iowa, U. S. A.

Shipped **COMPLETELY ASSEMBLED**
READY TO INSTALL



ROYAL FURNACE BLOWER

Models with 12" or 10" blower wheel

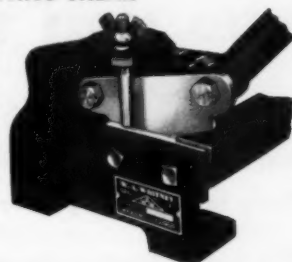
- Heavy steel bottom, requires no cementing.
- High motor mount, safer in damp basements.
- Large access door, standard-size filters.
- Variable speed drive, easily adjusted.
- Unusually quiet, sturdy construction.
- Beautiful baked-on enamel finish.
- Heavy duty motor, automatic overload protection.

For Prices and details, write

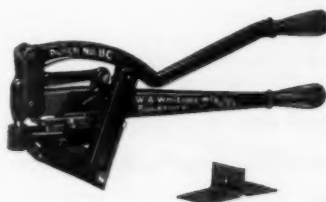
ROYAL PRODUCTS CO.
1406 E. 4th St Waterloo, Iowa

CHICAGO STEEL SLITTING SHEAR

For slitting long sheets and for cutting steel bars, band iron, etc. Main frame steel casting with offset for clearance in cutting long sheets. Capacity 3/16" x 2" bars, 10 gage sheets. Equipped with adjustable hold down.



NO. 8-C CLIP PUNCH



Capacity three thicknesses of 20 gage steel. Length 18 1/2". Weight 8 lbs. Special tool for fastening seams in duct and sheet metal work. No second operation or hammering down required.



Write for catalog and see your local jobber.

WHITNEY MFG. CO
636 RACE ST. ROCKFORD, ILL.

GOOD JOBS NEED GOOD TOOLS

For Longer-Lasting, Cooler-Handling use the "FITRITE" SPECIAL ALUMINUM MOP HANDLE.



Light weight, unbreakable, economical. Will not burn. It's job-tested, engineer approved, and offers many exclusive features that make it the most popular Roofers' Mop Handle made. Offered in 6', 7', and 8' lengths.

A MECHANIC'S THIRD HAND

"FITRITE"
3-WAY
CLAMP



A necessary tool for every sheet metal man. Use it for on-the-job bending, forming, seaming, straightening.

Throat 3 5/8" deep
Jaws 3 1/2" x 3/4"

Price \$3.55

"FITRITE" SAFETY HOISTING HOOK

The Sliding Sleeve is gravity operated and drops into position automatically keeping any item safely locked in while hoisting.



A new hoisting hook for safely hoisting buckets and other materials.

Price \$2.50

For 1" rope or cable.

To protect the trade, please use your printed stationery

DAVID LEVOW 698 HART ST.
BROOKLYN 21, N.Y.

NEED MORE SALES?

Triple AAA Manufacturer with seasoned marketing team would like to market your items to the heating trade.

We have cultivated the more than 700 top-notch distributors who are our customers, for over twenty years.

Will consider brand name items.

Strong promotional and sales effort plus association with one of the finest old line companies assures your profit.

Write Box 1090, American Artisan
6 North Michigan Avenue
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Thermo-Products, Inc.

"THE GOOD BUSINESS LINE"



Feature a COMPLETE LINE of oil and gas, top quality units: lo-boy basement, counterflows, hi-boy upflow, oil-fired and gas-fired horizontal furnaces, suspended counterflows and oil and gas floor furnaces. Also included is summer air conditioning equipment in 2-3 and 5 ton units. Dealers benefit from our first unit profit plan. Find out about our "GOOD BUSINESS LINE."

WRITE FOR FREE LITERATURE!

Thermo-Products, Inc.
NORTH JUDSON, INDIANA



MANUFACTURERS OF
**FURNACE PIPE
AND FITTINGS,**
Prefabricated Ducts,

also conductor pipe, eaves
trough, drip edge, rake strip, etc.

THOR METAL PRODUCTS CO., INC.

Box 118 Eastwood Station Syracuse, N. Y.



appointments

(Continued)

merly operated his own sales management firm in Philadelphia, has been assigned a district including parts of Massachusetts, Maine, Rhode Island, Connecticut and New York. Mr. McAlpine's territory includes parts of Ohio and Michigan. Mr. Stites will cover parts of Kansas, Missouri, Colorado, Iowa, South Dakota and Nebraska.

► G. G. WORKINGER as general sales manager for McQuay, Inc. Before joining McQuay, Mr. Workinger was with the York Div. of Borg-Warner Corp.



G. G. Workinger



R. Carter Dye

► R. CARTER DYE as general sales manager for the aluminum division of Olin Mathieson Chemical Corp. Mr. Dye joined the firm in 1955 as executive assistant to the executive vice president of the aluminum division.

► LAURENCE TRANT & Co., with offices in Norfolk and Richmond, Va., as sales representative for Buensod-Stacey, Inc. handling the sale of dual duct air conditioning equipment. Lancaster May & Co. of Baltimore and Washington, D. C. has also been named to handle dual duct air conditioning equipment for the company.

► JOHN M. VANSELOW, formerly a field representative in the Philadelphia area for L-O-F Glass Fibers Co., as representative in the firm's southeastern region.

Elgo Ventilating Specialties

The Favorite Automatic Shutter

The Elgo Automatic Shutter is the favorite of many large users because of its outstanding features. Easier opening and tighter closing. Weather-stripped on all sides. No flapping or fluttering. Sizes 12" to 72" square — also rectangular.



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AUTOMATIC SHUTTER
Front View (Open)

Free
CATALOG

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Rates for classified advertising are 12 cents for each word, including heading and address. One inch \$6.00. Count nine words for keyed address. Minimum \$2.00. Closing date 20th of month preceding publication.

BUSINESS OPPORTUNITIES

BUSINESS FOR SALE — Doing general sheet metal work. Oldest shop in town. G. O. Crouch & Son, 305 East 10th St., Chattanooga, Tennessee.

SHEET METAL SHOP FOR SALE — Established business in Boston, Mass. suburb. 3-8 man shop capacity. Good shop equipment. Good accounts. Excellent industrial, commercial, residential location. Priced very reasonable for quick sale. Owner retiring. Write Key 1089, American Artisan, 6 N. Michigan Ave., Chicago 2, Illinois.

SITUATION WANTED

SALES ENGINEER AVAILABLE — 20 years experience heating industry sales, service, and management. Desire territory representing manufacturer. Will consider engineering, service or training school department position. Married, 41 years of age. Address Key 1083, American Artisan, 6 North Michigan Ave., Chicago 2, Ill.

FOR SALE

For Sale — 2 1/4" x 14" floor perimeter registers, etc. also baseboard perimeter, supply and return grilles, etc., for sale at HUGE SAVINGS, by manufacturer, due to change in plant location. Limited time. Rush orders or inquiries Dept. #19, Key 1086, American Artisan, 6 North Michigan Ave., Chicago 2, Ill.

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by J. J. Mirabile

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Handles up to 3" wide, 22 ga. or lighter. Hand or foot operation. Mounts on bench, or on job with clamps, or bolts and screws.

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For fastening slips or seams on ducts. Will push a "half moon" through 3 thicknesses of 18-ga. steel. No hammering or flattening out to fasten slip to the duct.

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Quick Set Dividers



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Chicago Hand Brakes
Chicago Press Brakes
Pexto Power Shears
Pexto Foot Shears
Pexto Rotary Machines
Pexto Slip Rolls
Pexto Bar Folders
Smith Cleat Benders
Savage Nibblers
Mipatan Pittsburgh Lock Hammers
Peer Spot Welders
Reed Power Rolls
Wysong Shears
Whitney Punches
Whitney Foot Presses
Pexto Mechanic's Tools
Black & Decker Tools
Bett-Morr Bandsaws
Marshalltown Presses
Punches and Dies

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CENTRAL-WEST MACHINERY CO.

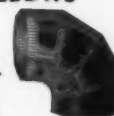
335 S. WESTERN AVE. CHICAGO 12, ILL.
PHONE: Haymarket 1-0900



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Registers and Grilles
Deliveries from Stock



Juniper Elbow Co. Inc.
72-15 Metropolitan Ave.
Middle Village, L.I., N.Y.

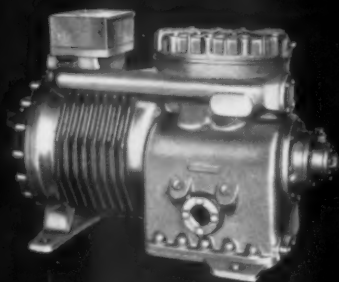
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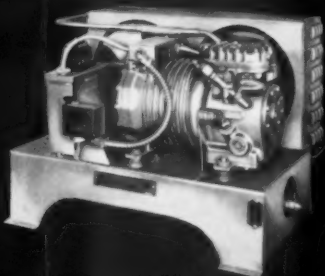
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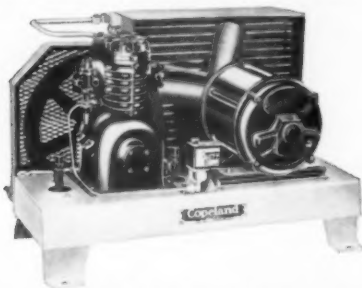
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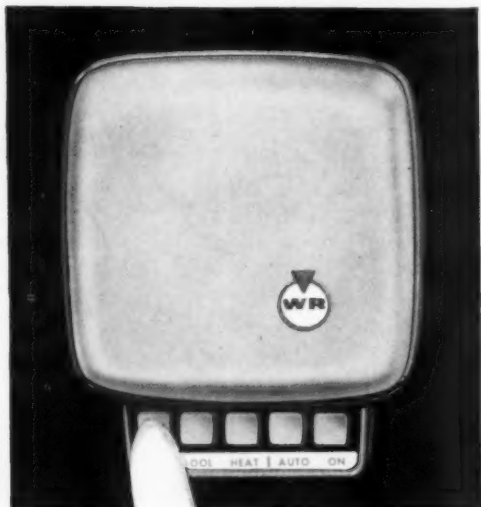
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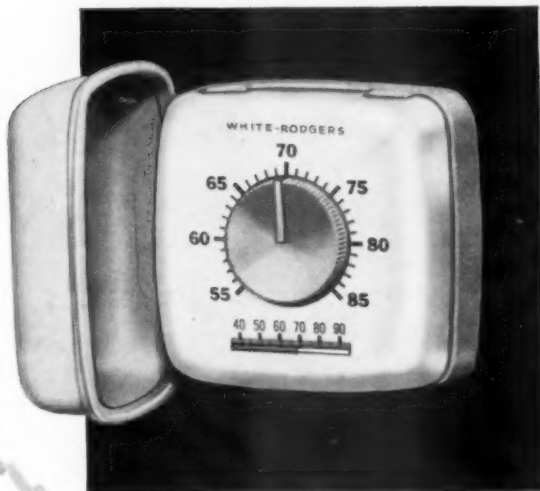


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